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MAY 1958

$1.00

FOOD ENGINEERING

A McGRAW-HILL PUBLICATION

FOR MANAGEMENT
IN MANUFACTURING,
PACKAGING, MARKETING

Chun King surges from zero to $17 million in 10 yrs. – p. 52

Dynamic Chun King presi
Jeno F. Paulucci

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FOOD ENGINEERING
FOR MANAGEMENT
A McGRAW-HILL PUBLICATION
MAY 1958
VOL 30 NO. 5

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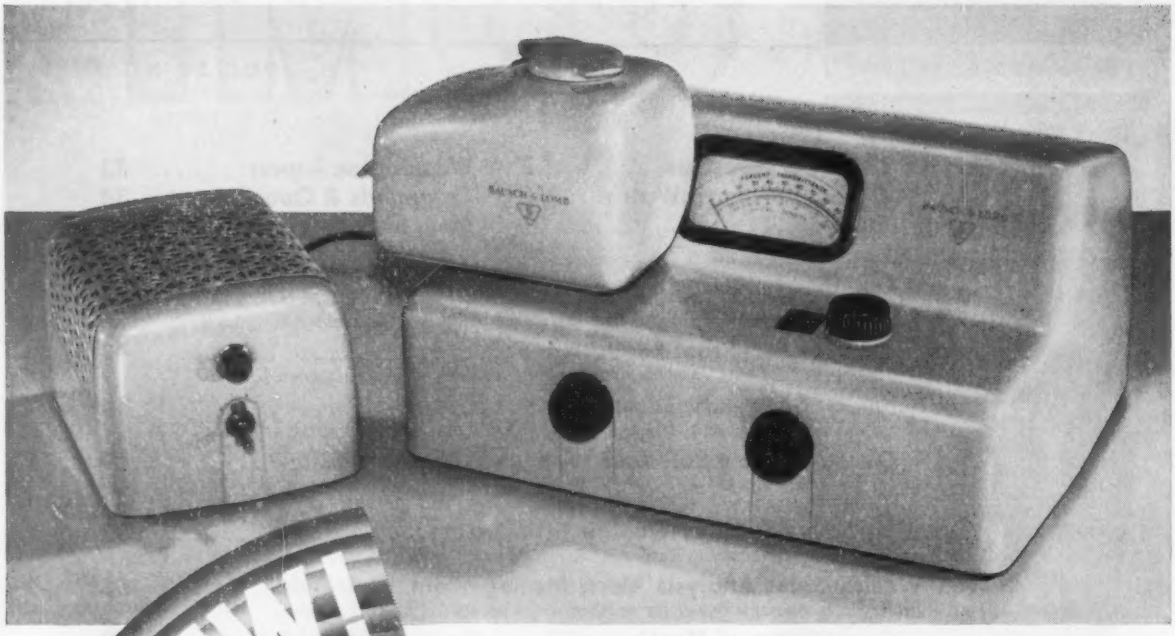

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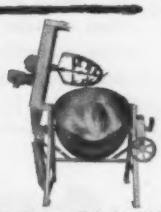
SA—streamlined balloon jacket design. Extra large diameter provides greater heating surface. Sizes 15 to 500 gallons. Constructed for steam working pressures of 40, 90 and 125 pounds.

SA MIX COOKER—has single or double motion agitator with or without hydraulic lift. Agitator lifts easily and smoothly out of cooker. Sizes 30 to 500 gallons.

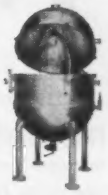
CW—designed to process batches up to 150 gallons. Positive worm gear. Handwheel gives control of capacity loads while tilting. Large diameter kettle gives fast even cooking.



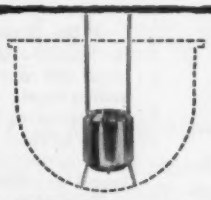
CW MIX COOKER—a hydraulic lift tilts agitator smoothly and easily out of tilting kettle. Available for 40, 90, 120 pounds steam working pressure.

PC—stainless steel pressure cooking kettle for meat and poultry processing. 90 p.s.i. in jacket and 15 p.s.i. in kettle. Quick opening latches. Top is lifted by eccentric lever. Sizes 30 to 250 gallons.

HV—vacuum cooker from 150 to 500 gallons. Hinged manhole provides access to the inside. Available with a mixer—circulator can be installed to increase heat transfer and agitation.



VT—vacuum cooker has no equal for small batches. Tilting top, easy loading. Sizes 30 to 150 gallons. Jacketed for 90 p.s.i. steam working pressure.



CIRCULATOR—stainless steel steam immersion heating unit installed in kettles of any size or shape. Gives heating surface at the center of kettle. Creates thermal agitation. Speeds up cooking 45%.

SB—shallow type kettle with balloon jacket. Streamlined. Constructed for working pressures of 40, 90, and 125 pounds. Sizes 15 to 350 gallons. Larger size kettle to meet specifications.

A—general purpose steam jacketed kettle used in processing food, drugs, and chemicals. Full ¾ jacketed. 15 to 500 gallons. Available in Type 316 stainless steel or nickel. Larger sizes to specifications.

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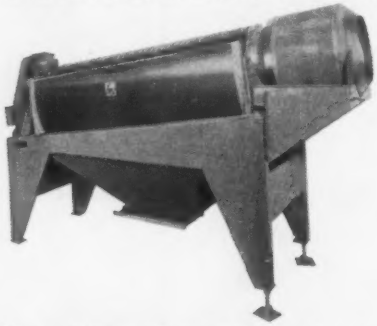
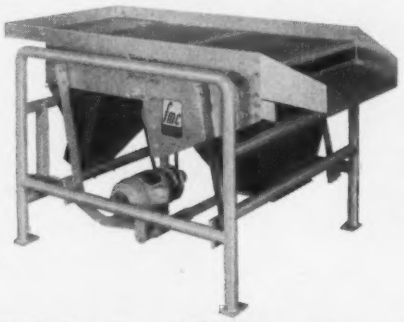
You'll be glad you installed these 5 profit-building machines this season. Here's why:—

1 FMC Bean Declusterer. Saves costly hand separation of bean clusters. Hooks and stripping plates within an inclined, rotating cylinder, do the job efficiently, materially reducing labor costs.

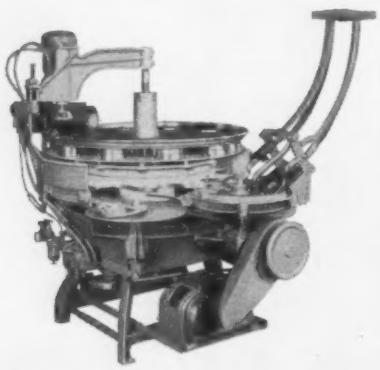
2 FMC Bar-Type Bean Grader. Using a completely new size-grading principle this unit *doubles production capacity* of conventional type machines! Check these capacities: up to 3400 lbs. per hr. on whole green beans; up to 4200 on cut beans!



3 FMC Continuous Bean Snipper. Snips both ends in clean-shearing, high speed operations at extremely low costs. Features stainless steel drum for less wear and maintenance, greatest sanitation. Easily adjustable, oscillating knives equipped with safety releases and automatic resets.



4 FMC Shaker-Type Nubbin Separator. A brand new development, this machine removes all the nubbins, and separates uniform length cuts from short cuts continuously and automatically. *Capacity: about 60% greater* than conventional separators!



5 FMC Press-Pack Filler. Replaces 3 to 4 hand packers to pay for itself in a short period of time! Provides semi-automatic filling of whole or cut, green or wax beans into No. 10 and smaller cans. Assures accurate fill weight through adjustable, pre-measuring, telescopic pockets.

Of the dozens of new and improved machines introduced by FMC to the food industries recently, none has caused more stir among green and wax bean packers than the five shown here.

Processors knew these machines were coming, because many of them have worked closely with FMC engineers and developmental experts studying and evaluating the needs found to exist in the field.

Each of these units introduces new concepts of automatic, labor saving design and operation. They pick up where older, less efficient equipment leaves off, and bring substantial economies to an industry that needs them. They can mean the difference between having a fair season and enjoying a highly profitable one.

Your inquiry for full information will be welcome.

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TRENDS & FORECASTS

SPECIAL FOOD SERVICE to EXECUTIVES

Business is leveling out at a somewhat lower level than in '56 and '57. But gross national product is only 3% off all-time record. Business is likely to be moving up before end of '58, McGraw-Hill economists predict.

No recession in eating. Kroger's sales were up 10% over a year ago for first 12 weeks of '58. Grand Union's were 12% higher for March.

"A host of developments make food industry one of most dynamic," says Chase Manhattan Bank. Since '47, annual expenditures for food have risen by $27 billion—more than combined increases for automobiles, housing, and other durables. Standard of eating is up 18%.

Most food manufacturers continue to enjoy usual sales and earnings stability and will maintain growth, Value Line Investment Survey finds.

Future increases for canned foods and beverages are indicated by gains in can shipments in February, over a year ago: Soft drinks, 45.2%; fruits and vegetables, 12.9%; shortening, 10.9%; beer, 10.8%. For meat, fish, and milk products, fewer cans were shipped. For all other, a 7.4% gain.

Gains in net '57 income (after taxes) for leading firms averaged 8% in baking; 4%, dairy; 39%, sugar; 1%, other foods; 3%, soft drinks. Decreases were —41% for meat; —3%, brewing, First National City Bank reports.

Competitor for top honors in sales gains is 49% increase in sweet brined cherries—from 53.6 million lb. in '56 to 79.7 in '57.

Fantastic increase in consumption of single-strength canned orange juice to 73,000 gal. per hour is reported by Florida Citrus Commission. Supply may run out in mid-July. Frozen orange juice concentrate was down only 8% in volume in late March. Rigid quality control has helped.

Prospective acreage of 7 vegetables for processing is 9% below '57. Reductions are: Green limas, 5%; snap beans, 1%; sweet corn, 13%; green peas, 15%; spinach, 20%; Increases: Kraut cabbage, 9%; tomatoes, 1%.

Baby food packers note 14% drop in marriage rate in February, compared to a year earlier. Low '30 birth rate and recession are causes.

Small Drop in Capital Spending

Strength of food manufacturing in the recession—and its confidence in the long range future—are pointed up by the results of the just-completed McGraw-Hill survey of capital and research expenditures.

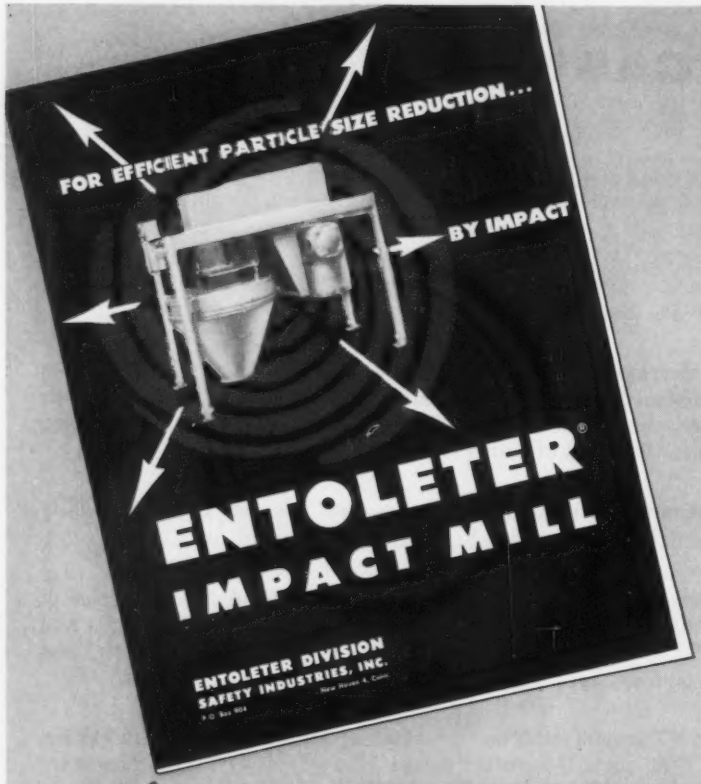
Whereas planned 1958 expenditures for new plant and equipment are down 18% below 1957 for all manufacturing, food and beverages are off only 4%. No less than $819 capital millions will be spent by our industry this year, $222 million of it in the beverage field (same as last year).

Of this investment in the future, 37% is for expansion, and a big 63% for replacement and modernization.

Food and beverage manufacturing capacity is increasing at a rate of 3% a year, and this rate is indicated through 1961. Last year and the year before, food manufacturing operated at 80% of capacity on the average, against 88% for '55.

Two major branches of the industry will spend more in '58: Dairy, up 12%; flour milling, plus 19%. These figures reflect increasing consumer demand for a wide variety of

See Developments to Watch p. 13



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Trends & Forecasts

milk products and for prepared bakery mixes.

On the lower side in '58 capital expenditures are: Brewing, −6%; baking, −24%; canning and freezing, −10%; meat, −13%.

Research Up 32% by 1961

Expenditures for research and development are increasing rapidly in the industry, the McGraw-Hill survey reveals. The total for 1958 is placed at $95.3 million, up 10%. By 1961, the figure will be $114.4 million, for a total gain of over 32% against '57.

The big research money is going for more salable products–81%. Of this, 53% is for new items and 28% to improve present products. The remaining 19% is for process improvement.

Quick pay-off is expected–37% of the firms putting the time at less than 3 years; 54%, 3 to 5 years; 9%, 6 years or longer.

HORS D'OEUVRES

▶ **Drab colored trucks are invitations to accidents. But bright billboarded food trucks invite people to live better and longer.**

▶ **Frozen chicken pie can be prepared for the family supper in 3 minutes, compared to 65 for the old-fashioned way. Frozen pie is 62 minutes good.**

▶ A machine that converts corn into artificial rice has been shipped to Manila by a New England inventor. Perhaps there's a market there, too, for the Kentucky contraption that turns corn into a liquid.

▶ **Retail food prices have risen 17% in 10 years, while per capita income has gone up 42%. We can't say that food is dirt cheap in this sanitary age, but it is cheap.**

▶ The new chemise dress style ought to help the food business. No matter how much women eat, it won't show.

▶ **Mild mustard is preferred 2 to 1 in New York, 9 to 1 in Texas. Tender-tongued Texans?**

Shopping in crowded supermarkets is an unpleasant experience for many people–even before they reach the cash register. Dissatisfaction opens the way to change. What's next?

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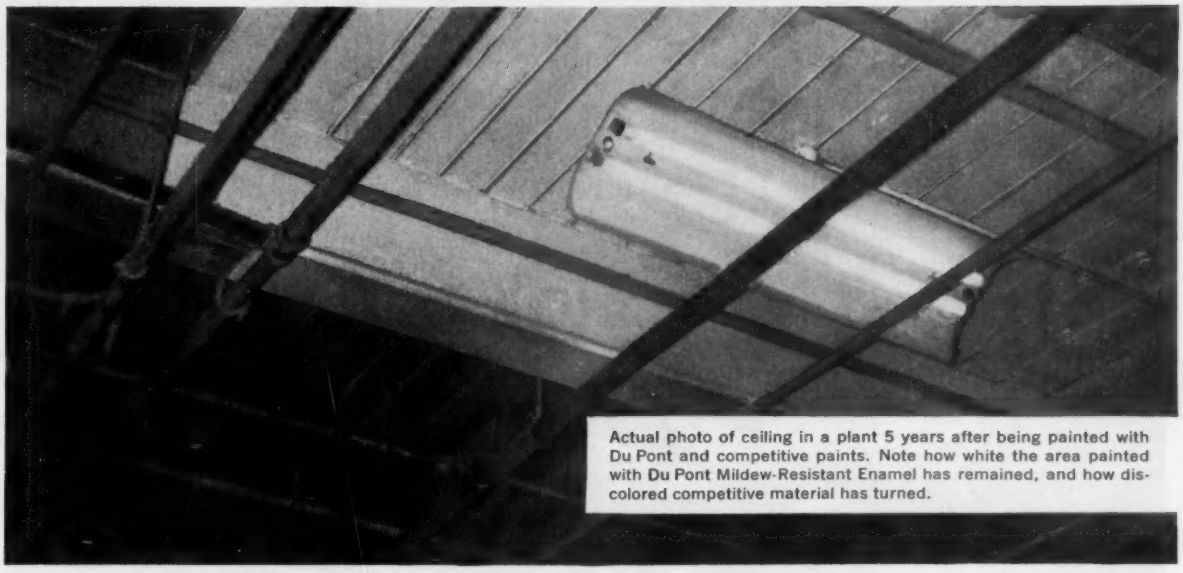
THE PROTECTION LASTS WITH DU PONT MILDEW-RESISTANT ENAMEL



Actual photo of ceiling in a plant 5 years after being painted with Du Pont and competitive paints. Note how white the area painted with Du Pont Mildew-Resistant Enamel has remained, and how discolored competitive material has turned.

It's odorless! Cuts maintenance costs!

Solves mildew and maintenance problems in hundreds of food plants

Tests prove that in most types of food processing plants, Du Pont 881 Mildew-Resistant Enamel Oyster White effectively retards mildew formations for months . . . eliminates the need for constant cleaning and scrubbing. It also resists chipping and cracking . . . stays bright looking. Like all Du Pont Maintenance Paints, it's pre-tested until perfect for your job. For complete information, mail the coupon . . . now!

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How To Make Your Meat
Show-off
in the Showcase!

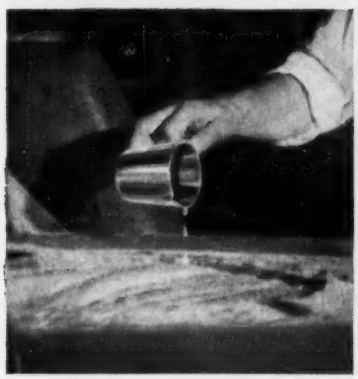
When Your Meat Looks Its Best,

It Sells Faster,

Stays Saleable Longer

Use Pfizer Isoascorbic Acid

The Low-Cost Way To Curb Color Fading, Reduce Smokehouse Time



The sales-appeal of the processed meat in any retail showcase hinges importantly on its eye-appeal to the shopper. That means *color!*

Today, it's easy for you to avoid the sales handicap of color fading due to time and other factors such as fluorescent lighting. Pfizer offers low-cost, easy-to-use Isoascorbic Acid and Sodium Isoascorbate for this protection.

A few ounces of Isoascorbic Acid or Sodium Isoascorbate assures long retention of the appetizing color that lures the shopper to *your* processed meats.

Isoascorbic Acid is added during the chop to such products as franks, bolognas and luncheon meats—sprayed on pre-sliced ham and bacon. Sodium Isoascorbate is added to whole hams during the pump pickling operation.

Protect your meat sales with Pfizer Isoascorbic Acid or Sodium Isoascorbate.

Pfizer

Quality Ingredients For The Food Industry For Over A Century.

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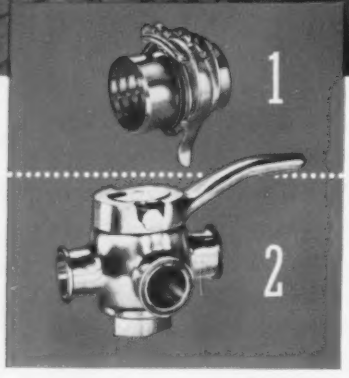
TRI-CLOVER

Stainless Steel Valves and Fittings
help maintain the purity and flavor that sell ice cream

The mix processing room of Borden Company's new ice cream plant in Columbus, Ohio, showing the widespread use of Tri-Clover Tri-Clamp® and standard Valves and Fittings.



1 TRI-CLAMP Snap-Action Spring Clamps offer greater speed in assembling and disassembling a positive, leak-tight joint, plus substantial savings in original investment cost.

2 TRI-CLAMP Lift Type Valves. Exclusive "cam action" of the handle provides a positive lifting and "cracking" action on the plug by working against the spring steel plate below the valve body.

This scene in the Borden Company's new 2-million gallon ice cream plant is a typical example of how large and small plants everywhere are turning to Tri-Clover Division products to guard against contamination that could destroy the delicate flavor and purity of the finished product. Ice cream producers have found that Tri-Clover's sparkling clean Tri-Clamp and Standard Stainless Steel Valves and Fittings combine the highest degree of corrosion-resistance and sanitation with the labor-saving ease of cleaning that helps reduce processing costs.

Our engineering staff, backed by many years of practical experience and specialized knowledge in completely sanitary handling of milk products, liquid sugars, syrups and other liquid products, will gladly help you solve your processing problems. *Write for Catalog 1-154 or see your nearest TRI-CLOVER DISTRIBUTOR.*

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DEVELOPMENTS TO WATCH

SPECIAL FOOD ENGINEERING SERVICE to EXECUTIVES

Promising "new" flavor enhancer, lemon oil, is being researched by Sunkist and food manufacturers. Mixed into shortening for 1,000 lb. of white bread dough, for example, 1 oz. improves taste of bread ingredients.

Use of synthetic cyclamate sweetener in curing meats improves color and flavor. Bacon doesn't scorch easily or stick to pan when fried.

Gamma radiation of Jerusalem artichoke hydrolyzes inulin content to fructose, sweetest and costliest sugar, experiments at Utah State reveal.

New thaw indicator of postage-stamp size, easy to affix to frozen food packages, has been developed. It's tailored to temperature and time.

Hollows in cucumbers are caused by bacteria already inside vegetable in field, Israeli scientists say. Bacteria multiply during fermentation.

Tablets that flavor syrup made from sugar and water offer opportunity to make syrup conveniently "available" with waffle and pancake mixes.

Automatic package-fill control (± 1/64th oz.) is achieved with new Bartelt continuous electronic checkweigher. Companion trend calculator and servomechanism make automatic fill adjustments.

High-speed automatic packaging in polyethylene is facilitated by recent changes in machines, such as use of Teflon parts in contact with poly.

Kraft has FDA permission to use sorbic acid treated disks on top of cylindrical ½-lb. units of cold-pack cheese experimentally. Purpose is to inhibit mold. Label statement is required. Permit is for 1 yr.

More uses of radiation cooling of food products and materials are developing. Experience and experiments continue to indicate more rapid heat removal, with noticeable benefits to product quality.

German sonic-vibration filters, sifters, and wet screens separate particles as fine as 30 microns with little power. Now available here. Will economically remove fines from ground coffee, for instance.

Surface temperature of fast-moving process stream, as on drying conveyor, is measured accurately at distance of several feet by new multi-frequency radiation pyrometer. Auxiliaries control process.

See Washington Report p. 23

New filter-cake-thickness detector operates signal or initiates next operation. It has pressure-sensitive diaphragm located inside filter.

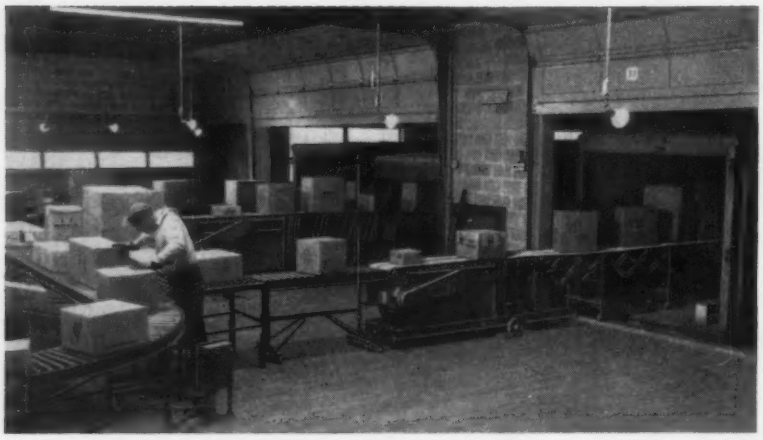
Pyroceram crystalline ceramic is being tested for sanitary, thin-wall, heat exchanger tubing. Withstands high temperatures and severe heat shock.

Process control is possible with tiny mercury thermometer developed for missiles. Only ⅜ in. long, it has small electrical contacts in glass.

SEE NEXT PAGE ➔

Ask Standard

how to cut costs with conveyors



JERSEY COAST FREIGHT LINES, INC., NEPTUNE, NEW JERSEY, uses a variety of Standard conveyors. Here, powered EXTENDOVEYORS and gravity roller conveyors move freight from trucks to handler for distribution to three conveyor lines in terminal. EXTENDOVEYORS can stretch and retract.

"Tailored" conveyors handle small shipments 66% faster

The formerly tedious job of unloading, sorting and reloading multiple small shipments at this terminal is now a fast, easy operation. A system of Standard conveyors has cut handling time 66%, eliminated congestion, reduced physical effort.

This smooth-functioning system typifies the efficiency and economy possible with Standard conveyors . . . wherever materials must be moved. They're easy to install and exceptionally durable, offer maximum flexibility at low costs, can be designed to meet any operation or space requirement.

For details on Standard's complete line of gravity and power conveyors — permanent and portable — contact STANDARD CONVEYOR COMPANY, General Office: North St. Paul 9, Minnesota.

FAST, CONVENIENT SORTING is done off three conveyor lines consisting of Standard HANDIBELT powered units and gravity roller conveyors. At right, HANDIBELTS form conveying "bridge" under which terminal personnel and fork-lift trucks can easily pass.

Call the Standard representative listed in the yellow pages of your phone book or write direct for Bulletin 309. Address Dept. D-5.

Standard 50 years of conveyor experience

GRAVITY & POWER CONVEYORS

Sales and Service in Principal Cities

Developments to Watch

Gets More, Also Better Starch With New Corn Impact Milling

Striking advance in the separation of starch and gluten in the corn wet milling process is spotlighted by Corn Products Refining Co.

The big stride is in CPR's radically new impact milling—which has upped the yield and quality of starch and further reduced costs through shortening the operation. Further, the system lends itself to fully automatic control.

The process is carried on at the North Kansas City factory with a battery of 480 special "stationary cyclones" operating on the centrifugal force principle.

First tested in one of CPR's smaller plants, the modern stainless steel impact mills replace the old stone mills.

Moreover, flash dryers now cut the starch drying time to "a matter of seconds," in contrast to the old kiln and oven operations of yesterday, which took as long as 20 hr.

And significant progress is also noted in conversion of starch to sugar (dextrose) by using granular carbon rather than the bone char and vegetable carbon formerly employed in refining.

Quality Test for Flavor

Experiments suggest that paper chromatography may be the key test for evaluating quality of vanilla extracts, says Boyce-Thompson Institute.

With this technique, the good samples can be separated from spurious ones. Then quantitative methods can obtain substantiating evidence.

It's believed that p-c test will detect most forms of plant extracts. In checks made on 6 tenfold and 14 single-strength extracts, 2 of each group revealed foreign matter.

80% of Store Juice Rated 'A'

Retail-market frozen orange concentrate has scored Grade A in 79.2% of samples, despite store-cabinet temperatures generally running above the recommended 0F.

So reports the Florida Citrus Commission.

Juice packed since Florida's December freeze was included in the check—101 of the 250 samples. And it matched the all-samples rating, with 77.2% judged as Grade A.

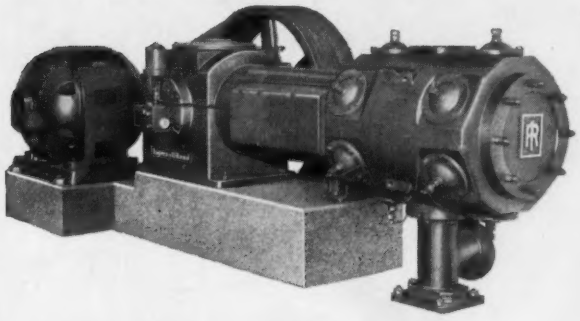
Of 9 samples termed sub-standard, only 2 were found in the post-freeze lot.

Turn to p. 17

NEW COMPRESSORS

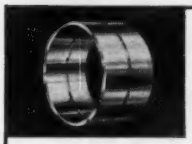
...with heavy-duty features proven in larger Ingersoll-Rand compressors

ESH* (horizontal)



ESV* (vertical)

*The same compressor in either horizontal or vertical arrangement – 20 to 150 hp sizes, single-and multi-stage, pressures up to 5000 psi and vacuums.



Full-floating aluminum bearings never need adjustment

The full-floating bearings "roll with the punch," taking each thrust on a different portion of the shell. They are foolproof, and never require fitting or adjustment. Main and crankpin bearings are made of I-R's special aluminum bearing alloy, which has higher load capacity and better heat conductivity than other bearing materials.

Air-cushioned Channel Valves give unmatched performance

Known the world over for lasting efficiency, dependability and quiet operation, Ingersoll-Rand air-cushioned Type A Channel Valves are entirely different in design and principle from any other valves in use. Type A Channel Valves were developed especially for modern compressor speeds, and feature a separate stainless-steel seat plate which can be reversed or replaced for new life.

Never a need for adjustments– frame is kept sealed!

Here's an entirely new line of compressors, built to run longer — much longer. They're more compact, more efficient, and require less attendance, less maintenance. They offer greater capacity in less space, and are ruggedly built and highly refined to take years of continuous hard service.

All running parts are precision-machined and need no fitting or adjusting, so the frame is sealed — dirt stays out, and the major causes of wear are eliminated!

There are many design features—including filtered force-feed lubrication and full-floating self-adjusting metallic packing — that have heretofore been found only in larger Ingersoll-Rand compressors. Let your I-R representative tell you more about these new compressors, and how they can save you money.

Ingersoll-Rand

T-815

11 Broadway, New York 4, N. Y.

In engineered products, there's no substitute for experience!

COMPRESSORS • GAS & DIESEL ENGINES • PUMPS • AIR & ELECTRIC TOOLS • CONDENSERS • VACUUM EQUIPMENT • ROCK DRILLS

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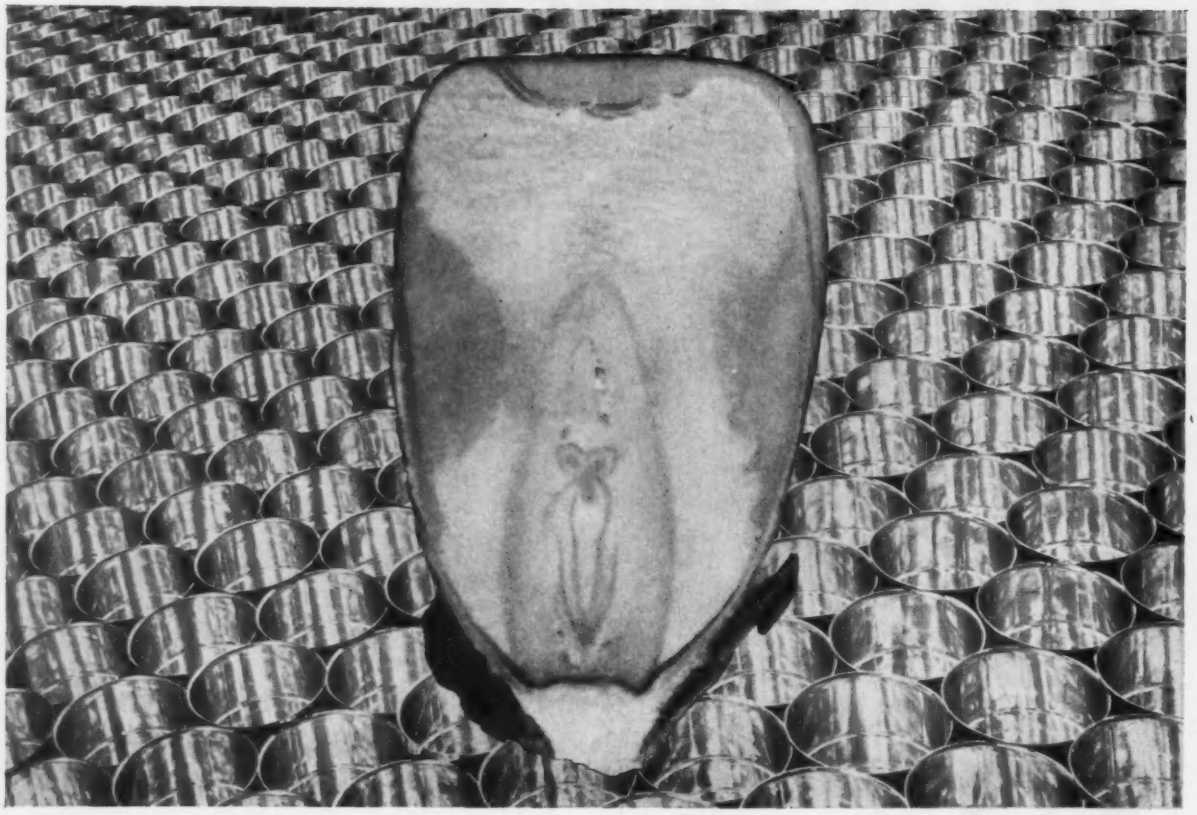
SPECIAL STARCHES



for Special Effects in Canned Foods

Special Starches from National simply stabilize or thicken. Nothing else! As stabilizers they never cloud color, never mask flavor. As thickeners they maintain viscosity characteristics even after extended storage. The result is these six special effects:

- Full Natural Color
- Full Flavor
- Smooth Creamy Flow
- Uniform Viscosity
- Shelf Life Stability
- Breakdown Resistance

These unusual starches are refined from corn, amioca or tapioca. They improve canned foods that range from soup to dessert. We'd like to show you how. Just write, including a description of your product or problem.

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Developments to Watch

Detects Frost Damage in Fruit

Orange rotated on this new grader is X-rayed, whereupon meter (atop control box on right) tells whether it's frost damaged and, if so, how much. Rise in voltage reading when rays encounter non-uniform fruit sections is basic principle. Envisioned are automatic 10-a-second checks of citrus fruit using a commercial version of this lab unit, which was designed by W. Kyle and J. McAteer of U. of Calif., L. A.

BRIEFLY

• A WORLD COCOA AGENCY has been proposed before the Food & Agricultural Organization of the UN. Greeted with some favor, the idea is to set up a buying and selling body operating from New York and London. Object is amelioration of stock and price instability.

• NEW CANNING SYRUP from converted barley starch shows promise, reports Dr. K. Georing of Montana State College. He pictures sugar-beet factories making the syrup (acid-hydrolysis conversion) in off-season.

• ARTIFICIAL FREEZING of citrus trees is slated by the Florida Citrus Commission in studies to pin down key factors of weather effects. Plans call for erection of special control chambers around test trees. Cold-resistant varieties are sought.

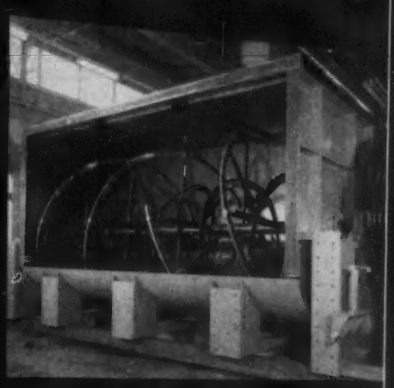
• NEW NAME of Rutgers U.'s Department of Food Technology is Department of Food Science. Revision stems from growing distinction between words "technology" and "science," latter being found more consistent with comprehensive work of department.

• A-BOMB FALLOUT contamination of food crops may be reduced by adding lime to growing soils, says

DAY'S largest blender, drive end view. Mixes a carload at a time.

DAY builds world's largest mixer for CLINTON

The world's largest blender built by DAY and installed at Clinton's new plant.



Interior of DAY'S largest blender, showing one of the two 9' agitators.

The world's largest mixer is part of a big installation of DAY equipment recently installed at the Clinton Corn Processing Company, a division of Standard Brands, Inc., Clinton, Iowa. It is so large that it can blend 60,000 lbs. of dextrin (one carload) at one time, assuring absolute uniformity of these huge batches.

DAY mixers, blenders, sifters, roll mills, and laboratory equipment are found in many major process plants, helping produce products better, faster and more profitably. You, too, will improve quality and cut costs when you use DAY process equipment. Write for information.

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FASTEST ACCURACY KNOWN in Moisture Determinations!

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Analyzer

Does Complete Test . . . less than 60 seconds . . . within ± 0.1%

This new Moisture Analyzer, based on *N*uclear *M*agnetic *R*esonance, handles moisture tests with incomparable speed and accuracy.

Each test is completed in less than 60 seconds, yet results are consistently reproducible with accuracy within ±0.1%. Unskilled personnel can easily operate the NMR Analyzer on moisture determinations.

Foodstuffs, and other solid material in almost any form, are analyzed by the instrument within a span of seconds for each test.

The Schlumberger Analyzer further improves rapid sampling and testing operations by taking *large* samples, around 35 cc.

The NMR is non-destructive. It makes no change in the material being tested—removes no moisture.

Where operations, such as milling, packaging, grading, or storing, or actual process control, depend on moisture content, the speed of the NMR Analyzer permits tremendous gains in efficiency and control. The NMR Analyzer, whether in the lab or on the production line, will save dollars for your company.

The entire procedure of determining moisture with the Schlumberger Analyzer is accomplished in these three simple steps:

1. Place the weighted sample in the instrument.
2. Flick on the scanning switch.
3. Read off the moisture value recorded on the chart.

FREE: Our new NMR Brochure contains valuable information on this entirely new analytical tool. Please address Department FE-2 for your copy.

For performance reports on how the Schlumberger Analyzer is performing in bulk materials processing call or write:

SCHLUMBERGER *Ridgefield, Connecticut*

WELL SURVEYING CORPORATION

Developments to Watch

Dr. E. B. Fowler of the Los Alamos Scientific Lab., U. of Calif. Studies indicate that crops from soils high in calcium (as supplied by lime) take on less of the dangerous strontium-90. Further, some plants, such as lettuce, prefer calcium. Also, plants with deeper roots are less vulnerable.

• BLAST CREATION by A-bombs of new water reservoirs in arid regions—opening up new cultivation areas and thus boosting the food supply—is looked on with skepticism by Government geological and soil experts. They say amount of earth that would have to be moved would be too vast even for A-explosives. And danger of radioactive contamination is still posed.

• SCHOOL OF PACKAGING, Michigan State U.'s pioneering venture, now plans a new 3-story building to house all facilities on the E. Lansing campus. Prominent would be the food section, stressing package development and evaluation. A full line of working equipment would be installed.

• ALUMINUM CAN MARKET is now target of combined sales forces of Victor Metal Products Co., Greenwich, Conn., and Reynolds Metals Co. Unique sales team-up stems from convictions of both firms that lightweight containers have top growth potential.

Schedule of Events

May

18-21—Flavoring Extract Mfrs. Assn., annual convention; Edgewater Beach Hotel, Chicago.
25-28—Super Market Institute, annual conference & exhibit; Convention Hall, Atlantic City.
25-29—Institute of Food Technologists, annual convention & exhibit; Palmer House, Chicago.
26-30—National Packaging Exposition, American Management Assn.; Coliseum, New York City.

June

9-12—National Materials Handling Exposition; Public Auditorium, Cleveland.
10-20—Quality Control by Statistical Methods, advanced short course; Purdue U., Lafayette, Ind.
16-28—Annual Management Course; College of Engineering, State U. of Iowa, Iowa City.
23-25—American Society of Refrigerating Engineers, annual convention; Hotel Leamington, Minneapolis.
27-29—American Society of Heating & Air-Conditioning Engineers, annual convention; Penn-Sheraton Hotel, Pittsburgh.

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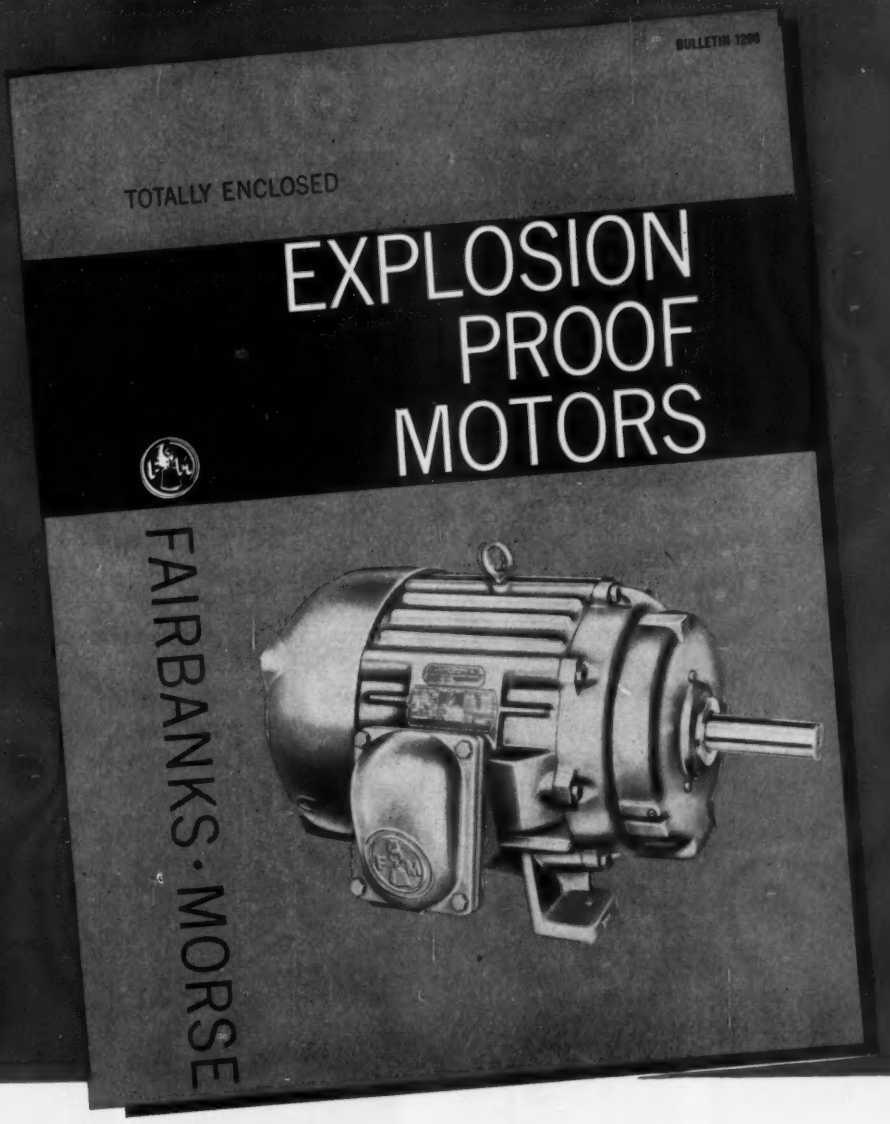
NEWEST MOTOR TO CARRY UNDERWRITERS' LABEL



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EXPLOSION PROOF

All new inside and out—new, rugged frame design . . . for new, improved performance in all Class I, Group D, and Class II, Group E, F and G hazardous locations.

Get full information . . . send for Bulletin 1200 on new Fairbanks-Morse line of totally enclosed, explosion-proof motors. Write today: Fairbanks, Morse & Co., Dept. FE-5, Chicago 5, Ill.

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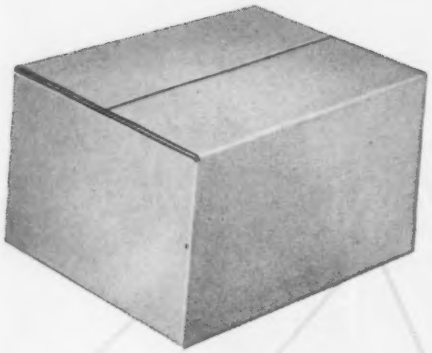
What's the worst



What you should know about testing of Union Boxes

You might try dropping it (filled) on a metal floor . . . compressing it . . . bouncing it in a revolving drum.

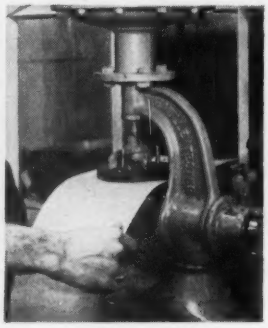
These are just a few of the ordeals corrugated board and boxes undergo before the finished container is delivered to your plant. No single one is "worst" or "best", or will give a true measure of *overall* performance. Yet each is uniquely important.

Some of these tests, made on Union Board and Boxes, are described here. They represent another part of Union's structural design service to all shippers.

1. Shock treatment

During rail or truck shipment, your box must be able to withstand the shocks of sudden stops and turns. To measure its impact resistance, filled box is shot down an inclined runway and bounced against a solid backstop.

1. Impact test



2. Mullen test

← For more data, circle this page number on card at back

punishment you can give a box?

2. The bursting "barometer"

A railroad ride can be rough experience. That's why boxes shipped this way must meet minimum standards for bursting strength of board as set by Freight Classification Rule 41. If they pass this trial, known as the Mullen Test, they're ready for the worst jolts and jerks.

3. Testing for tear

Box flaps are scored to make them fold and unfold easily at your plant and at final destination. The easier the better. But during scoring some strength at that point must be lost. How much, and how much is retained, is measured by the combined Torsion-Tear Test.

4. "Squeeze-box" hazard

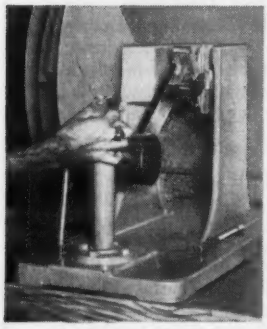
Whatever your product it will be subjected to all sorts of pressures on all sides during shipment and storage. The Compression Tester anticipates these forces. It squeezes empty box till collapse to test for rigidity and stacking strength . . . helps weed out possible trouble sources such as poor adhesion, scoring, joints and corrugations.

5. Down she goes!

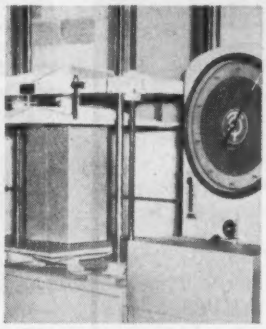
Bad falls are among the commonest causes of failure. The Drop Test—repeated flat-on-face and corner drops of loaded box on to a metal surface—provides a real gauge of the box's resistance to sudden shocks. Test also checks suitability of tape and strength of manufacturer's joints.

6. Taking a tumble

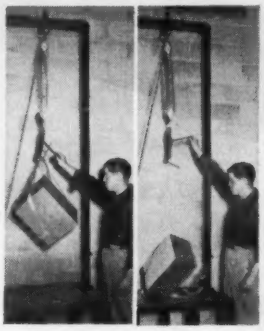
It takes a tough box to survive the Drum Test's "black-and-blue" treatment. Drum rotates, box inside tumbles against fixed metal obstacles until it finally fails. Test is an excellent gauge of the durability of facings, flutes, seams and interior packing.



3. Torsion-Tear test



4. Compression test



5. Drop test

6. Drum test

Write for new, informative booklet, "Quality Control of Corrugated Boxes."

union camp

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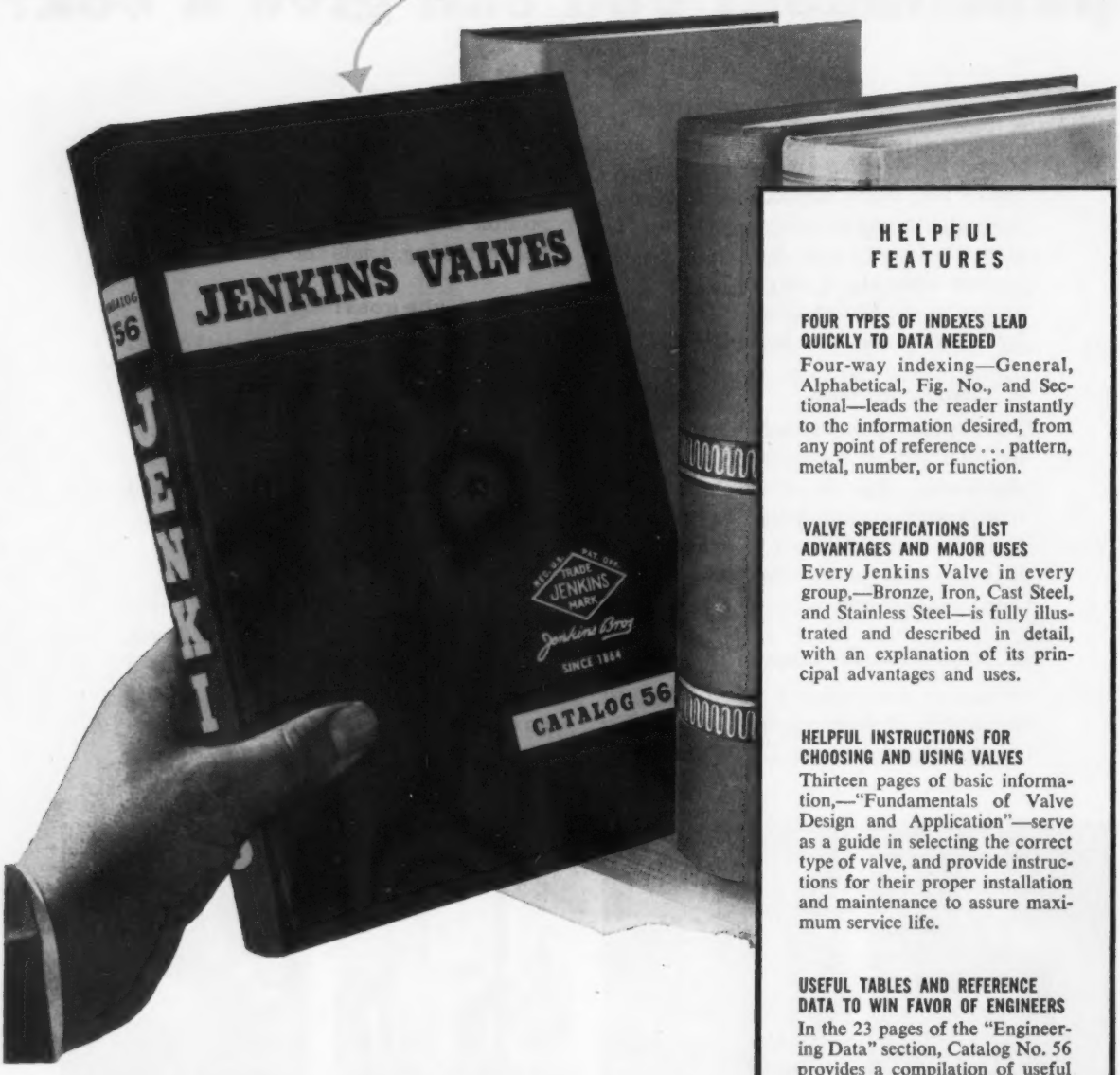
DO YOU HAVE THIS HELPER?



HELPFUL FEATURES

FOUR TYPES OF INDEXES LEAD QUICKLY TO DATA NEEDED

Four-way indexing—General, Alphabetical, Fig. No., and Sectional—leads the reader instantly to the information desired, from any point of reference . . . pattern, metal, number, or function.

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From cover to cover this 296 page general catalog of Jenkins Valves was designed to give specifiers and buyers all the data they want . . . and FAST. It's the book to reach for FIRST when you need valves or valve information. To get your copy, write (on your letterhead) to Jenkins Bros., 100 Park Avenue, New York 17.

JENKINS VALVES

LOOK FOR THE JENKINS DIAMOND

JENKINS SINCE 1864 Jenkins Bros

Sold Through Leading Distributors Everywhere

Move to Get New Additive Bill 'Off Pad'

Chances appear brighter for Congressional action this year on food-additive legislation. Hearings last month promised at least a count-down and firing. And there could be an orbiting.

The House Health & Science Subcommittee will meet later this month to write its own bill–a compromise of the dozen bills now before it. All of these proposals call for manufacturers to pretest chemical additives.

Most notable augury for a compromise solution came when Grocery Manufacturers Assn. dropped its demand that the Federal courts have final say after FDA bars a proposed new additive on the contention that it would be unsafe in foods.

In the hearings, FDA Commissioner Larrick made this point clear: His agency would rather have no new law than one denying it final decision on an additive and its "functional usefulness." Of course, this point of functional evaluation raises a number of eyebrows.

All told, however, there is new promise in the general leaning toward a simple bill–the kind likeliest for quick House and Senate action.

Budget-Balked FDA Pushes Inspections

More check-ups on food plants are planned by FDA, even though its hopes of hiring a good number of additional inspectors have been balked.

Economy-minded administration officials turned down the agency's prior request for permission to seek $12 million from Congress to expand staff and equipment in the year beginning July 1. FDA then put in for what its more vocal supporters label a "standstill budget"–asking $9.4 million for fiscal '59.

This would leave the agency with roughly the same purse it had this year–thus markedly slowing down the three- or four-fold expansion FDA has ranged for its operations, officials contend.

In contrast to the 22% increase in personnel earlier contemplated on a $12 million budget, the $9.4 million will permit a staff expansion of only a fraction of 1%–addition of three persons to the current 1,150-man FDA payroll.

Nevertheless, plans call for inspecting 19,600 food, drug, and cosmetic plants in fiscal '59–or 900 more than this year.

The current $9.3 million budget represented a 15% rise in funds over fiscal '57 which, in turn, was higher by 15% than fiscal '56. These ups of recent years are credited by FDA with enabling its substantial boosts in enforcement activities.

. . . And Food Seizures Rise

FDA inspectors made 455 food seizures in the last half of '57, or 65 more than in the same period of '56.

In round figures, seizures of food stated to involve danger to health ran nearly 2 million pounds–three times the poundage of the same half-year period of '56 and again of '55. And food lots removed for involving filth and contamination amounted to about 4 million pounds, which was higher than for latter-half '56 and nearly double the figure for that period in '55.

Further, food seizures involving economic cheats (fraud) took 263,000 lb. from the market in the last half of '57, as compared with 155,000 lb. in the same period of '56 and only 4,000 lb. in the second half of '55.

Lathrop *Will* Have Gamma-Ray Unit

A major nuclear radiation plant will be included in the Army's Lathrop, Calif., Ionizing Radiation Center after all.

AEC and Defense Dept. now disclose plans to build a cobalt-60 gamma-ray food irradiator–a 2-million curie facility. The decision ends the uncertainty hazing the picture since November, when these agencies cancelled initial plans for a gamma unit (FE Dec. '57, p. 59 and 139).

Eases Bulk-Citrus Labeling Rule

Industry objections to labeling governing chemically-treated fruits and vegetables are partially met by these two new FDA regulations:

1. When citrus fruits offered in retail bulk displays have been so treated, placards must note the fact–but the cards needn't name the chemicals used.

2. There need not be any label declaration of preservatives applied prior to harvest.

Labeling of actual preservatives used poses a tough problem when retail bins must hold several lots of fruit treated with different chemicals. Recognizing the difficulty here, FDA now eases the requirement.

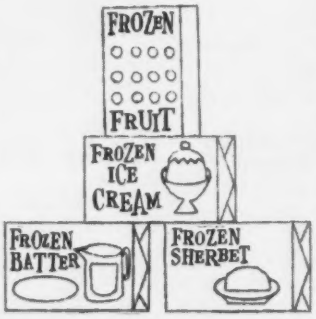
BRIEFS

Coverage of artificially sweetened fruit spreads with a standard of identity is proposed to FDA by National Preservers Assn. Specified is use of seven types of sweeteners in low-calorie products of 55% fruit content. "Aim," says NPA President Raphael, is "to see that the consumer with a weight or health problem enjoys the same high quality fruit spreads as does the person who buys the fruit-and-sugar spreads."

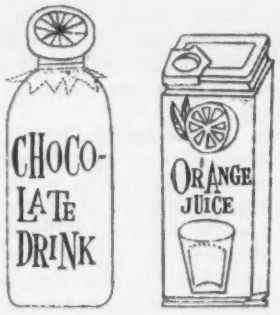
Ice cream would have to include 10% milk fat and total milk solids of at least 20% under tentative standards just published by FDA. Five frozen products are spotlighted for identification: (1) Plain ice cream, (2) egg-containing ice cream, (3) ice milk, (4) fruit sherbets, and (5) water ices. From 2 to 7% and 1 to 2% milk fat, respectively, would be required for ice milks and sherbets. Further, amounts of air, water, and stabilizers in ice cream are limited, while use of certain synthetic emulsifiers is ruled out.

Which of these algin uses best solves your processing problems?

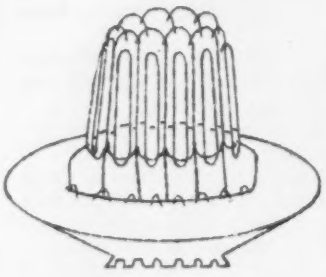
Thickening



Stabilizing

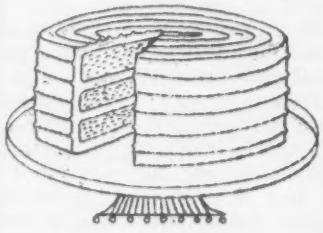


Suspending



Gelling

Emulsifying



Coatings and Icings

Unique and effective hydrophilic colloids, Kelco Algin products speed production and cut costs. Further, they improve your product's eye and taste appeal. They provide proper body and texture, reduce settling or separation, retain moisture in place.

Easy to use and readily soluble in hot or cold water, Kelco Algin products are providing the answer to diverse processing and production problems in many fields. If you have a problem in thickening, stabilizing, emulsifying or gelling, please contact us. The Kelco Company's technical staff is at your service, ready to recommend the right algin to solve your specific problem. Call or write your nearest Kelco regional office.

Kelco Company

120 Broadway, New York 5, N. Y. 20 N. Wacker Dr., Chicago 6, Ill. 530 W. 6 St., Los Angeles 14, Cal. Cable Add.: Kelcoalgin — N. Y.

B.F.Goodrich

Koroseal belt cleans easily, improves inspection too

Problem: When an ordinary conveyor belt was used to carry sliced peaches in this cannery, the clean-up job was long, costly work. After every shift the slime had to be scrubbed off the belt with brushes.

What was done: When a B.F.Goodrich distributor heard about the trouble, he recommended a Koroseal conveyor belt. Because it's made of Koroseal flexible material, this improved food-handling belt stands fruit juices, most acids, cooking oils and just about everything else that ruins other belts. It resists cracking and peeling, never gets soft or sticky. There's no danger of contamination with Koroseal—it has no odor, no taste, never gets rancid.

Savings: Since fruit juices can't soak into Koroseal's smooth, polished surface, the belt is a cinch to clean. At this cannery, all they do now is turn a hose on the belts at the end of a run and they are as clean and new-looking as ever.

Extra benefits: The plant operators also report that the tan color of the Koroseal conveyor belt, being similar to that of a peach, makes it easy to detect any imperfections in the fruit.

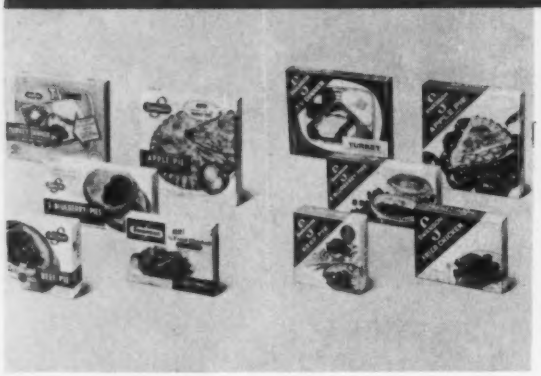
Where to buy: Your B.F.Goodrich distributor has exact specifications on the Koroseal food-handling belt described here. And, as a factory-trained specialist in rubber products, he can answer your questions about the many kinds of belting, hose, gloves, and protective clothing which B.F.Goodrich has designed for the food processing industry. *B.F.Goodrich Industrial Products Co., Dept. M-324, Akron 18, Ohio.*

Koroseal—T. M. Reg. U. S. Pat. Off.

B.F.Goodrich *industrial products*

For more data, circle this page number on card at back →

NEW PACKAGES & PRODUCTS



Family Design for all Swanson Frozens

A new family design for Campbell Soup Co.'s complete line of 19 Swanson frozen prepared foods recently made its debut.

Formerly, design and color combinations varied with each product group. Family identification was dependent on the Swanson logotype. This format was in contrast to Campbell's traditional stress on bold brand identification.

New design features a diagonal color division. Upper left corner of the carton is aquamarine and the lower right is white. A full color illustration of the prepared product is printed on the white. Angled lettering allows reading in either horizontal or vertical position.

Develop "Stemless" Mushroom

Morel mushrooms, considered the most flavorful, now can be grown to full commercial size in just 72 hr. in vats of pure, aerated nutrient fluid. This unique development is the result of 10 years of research by Yorktown Products Corp.

The stemless mushroom, renamed Yorktown Morel, can be cooked, dried, powdered, canned or frozen.

The developers have cited the new process as evidence of "the possibility of growing many other types of food in unlimited quantities in any climate with the advantage of being able to add vitamins and other nutritional ingredients."

Circle 26A on Reader Service Card

Plastic Bags for Beer Multi-Packing

Polyethylene bags made by Continental Can Co. are reported to have made a successful entry into the field of multi-unit beer packaging.

Printed Zip Cord and side seal bags are used by two regional breweries to package five 16-oz. bottles, six 12-oz. no-return bottles, and six cans.

In addition to the re-use value of the bag, the package also offers strong merchandising advantages.

The beer is bagged at the retail level by brewery dealer service personnel who go to stores with a supply of bags and help set up displays.

Circle 26B on Reader Service Card

New Package for Improved Contents

H. J. Heinz Co. has developed a sparkling new package for its new revamped mustard varieties.

Both the brown and the mild mustard now are reported to be made from "improved" recipes which "bring out a purer, sharper mustard flavor."

The regular 6-oz. and large 23-oz. jars for both styles of mustard have been redesigned to add better product appeal and brand identity.

The taller jar tapers only 8 deg., harmonizing with the supermarket trend to slanted shelves. The broad base facilitates stacking and reduces breakage at the store and home.

Buyer "Sees All" With Plastic Boxes

Stylized 5-oz. plastic containers are used by Borden Foods Co. for its cream cheese products, including two new ones recently introduced (cream cheese-roquefort blend and cream cheese with bacon and horseradish).

The oblong refrigerator dish package is reusable. It is molded from clear plastic and closed with a snap-on polyethylene lid. The box stacks well and provides airtight protection, insuring the keeping quality of the cheese.

The box and lid are manufactured for Borden by Buckeye Molding Co., Miamisburg, O.

Circle 27A on Reader Service Card

Cake Boxes Take First Award

First Award in food and beverage category at the recent 1958 Set-Up Paper Box Competition went to Pepperidge Farm Brandy Cake boxes.

Manufactured for the baker by Warner Bros. Co., Bridgeport, Conn., the box has a lid of gold foil with identifying copy printed in black. The die-cut portion of the manufacturer's trademark on the lid affords the customer a peek at the contents.

The brandy cake is individually wrapped in cellophane.

The competition was sponsored by the National Paper Box Manufacturers' Assn., Philadelphia.

Circle 27B on Reader Service Card

Zip-Open Bags for Pork Sausage

Reported as a "first" by Herman Falter Packing Co., Columbus, O., is a pork sausage bag with a strip tape opening.

Similar to the tape used on cigarette package overwraps, the tape runs the length of the package and through both layers of the duplex bag. A slight tug and the bag is open.

The suppliers of the bag, Milprint, Inc., feel that the easy-opening packaging is sure to be popular with housewives because of the saving in temper and time over the processor's old package.

Circle 27C on Reader Service Card

Tasty Dinners–And Only 275 Calories

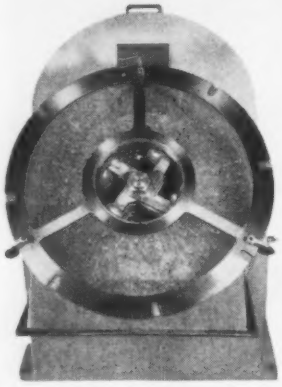
Complete frozen prepared dinner that have a total caloric content of only 275 each are now being offered to diet-conscious consumers.

Diets of Rochester, Rochester, Minn., have introduced eight dinners under the Dream Diet label. Each contains a tasty and attractive entree, vegetable salad, and dessert.

The line includes:

Diced beef with vegetables in gravy, oven roasted beef, pork tenderloin, swiss steak with gravy, broiled chicken dinner au naturel, breaded veal steak, breaded haddock, and macaroni scallopine.

5600 RPM stopped at 1/5000 second



Rietz Angle Disintegrator with top removed for viewing illustrates 3 major advantages.

1. Efficiency of 360° screen:
demonstrated by even dispersion of disintegrated pulp in bowl area surrounding screen.

2. Hammer-like breaking action of rotor:
note unbroken material at moment of impact about to be disintegrated.

3. Rapid grinding action between rotor and screen:
demonstrated by large, cleared screen area between rotor hammers.

Rietz Angle Disintegrator applications include:

Wet or Dry Grinding of Difficult Materials—Fine Pulping—Shredding—Fine Dispersion—Blending—Homogenizing—Dissolving of Solids in Liquids

As a sanitary unit, available in 4″ to 18″ rotor diameters, it finds a wide range of applications in both food and chemical industries.

Literature on Rietz Angle Disintegrators may be obtained from Rietz Manufacturing Company at either West Chester, Pennsylvania or Santa Rosa, California.

New Packages & Products

Spiral Bottle Design

Squirt Co. has unveiled a startling and attractive new "Swirl" bottle design for its popular soft drink. The exclusive package is used for the company's 7-, 12-, 24-, and 28-oz. sizes.

The spiraling design on the emerald green bottle not only adds instant brand identification but offers the consumer a handy gripping surface. To accommodate the new design, the label has been moved higher on the bottle. Bottles are made by Owens-Illinois.

Circle 28A on Reader Service Card

King-Size Tea Bags

Family-sized batched of hot or ice tea can be made quickly and conveniently with Topco Associates' new Food Club king-size tea bags. Each portion makes a full quart of tea.

Product is packaged in cartons of 12 bags each.

Cartons are made by National Carton Co., Joliet, Ill.

Circle 28B on Reader Service Card

Flaked Potato Product

Latest entry in the convenience foods category is Borden's Instant Whipped Potatoes, introduced in selected markets last month.

Made in flake form, the product offers the consumer a no-waste product that combines with hot water and milk to produce light and tasty whipped potatoes.

Maine potatoes are used exclusively in the process which includes a special flake drying process for removing moisture from the potato cells without breaking and destroying the cell walls.

Carton is of gay red and white striped cardboard. Each box holds two sealed polyethylene-aluminum-bleached kraft envelopes. Each bag holds enough flakes to prepare four servings.

Food in a Hurry

Three new convenience products have been added to the Quaker Oats line:

- All-purpose barley cooking in 10 min.
- Instant macaroni which is prepared in 3-4 min.
- Instant Quaker Oats prepared by adding boiling water to the cereal in the bowl.

Packaging Briefs

Glass Jars in 7- and 9½-oz. sizes are now used by Planter's Nut & Chocolate Co. for its peanut butter.

Individual portion packages for Nu-Way Foods Co., Atlanta, are made of heavy, clear plastic capped with a wax impregnated lid.

Larger Aerosol can (16-oz.) has been adopted for Isaly's Dairies' whipped cream topping.

Gold-Printed polyethylene potato bags are now used by Golden Triangle Packing Co.

Becton, Dickinson has a reason...

B-D Sterile Disposable Blood Lancets, specially designed to draw true finger blood samples with maximum patient comfort and safety, demanded packaging which would maintain product sterility and yet offer convenience in use. Answer, developed by Mason-Keller Corp., was this perforated strip made of Riegel's sterilizing glassine. In final step, lancets in packets are subjected to gas sterilization.

This sterile product, produced under the rigid standards of sterilization control insisted upon by the largest manufacturer of medical and surgical instruments, gives outstanding testimony that *protected by Riegel* means extra benefits... product protection *always*, plus flexible packaging materials that are:

... tailored to run at high speed on automatic machines

... made to your own specifications, printed, waxed, coated, and laminated combinations of all types

... packaging materials that are made right, run right, and priced right.

Hundreds of today's best sellers benefit from Riegel's uniformly effective system of product protection. You can too. Write Riegel Paper Corporation, 260 Madison Avenue, New York 16, N. Y.

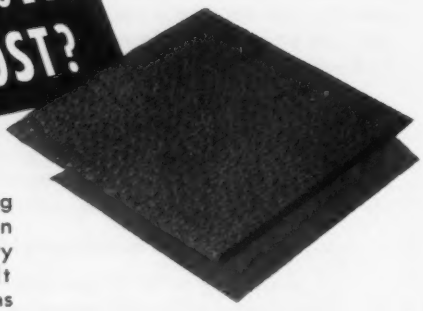
Riegel

PROTECTIVE PACKAGING MATERIALS

B-D's disposable lancets are kept sterile by special Riegel Sterilizing Glassine, printed, heat-sealed, packaged at high speed on Mason-Keller equipment.

VISIT OUR NATIONAL PACKAGING EXPOSITION, BOOTH 1419

HOW MUCH DOES BELTING COST?



Unless it has insured operating efficiency to do a good job in your plant, belting can be very expensive. To prevent belt failures and costly shut-downs specify:

GLOBE | STITCHED CANVAS BELTING

FINEST QUALITY AT STANDARD PRICES!

- A rugged wear-resisting belt, with exceptional flexibility and minimum stretch.
- Elasticity with elongation control after all excess stretch is removed in processing.
- Innersewed — Innerlocked construction with close rows of longitudinal stitching to hold the plies securely together.
- Additional rows of stitching reinforce and strengthen each edge, prevent curling and resist edge wear.
- Highest quality duck made to our own rigid specifications. Average tensile strength is over 750 pounds per inch of width.
- Special impregnations, coatings and covers to meet every conceivable operating condition.

Extensive manufacturing facilities, laboratory control of raw materials and 35 years of experience in producing highest quality belting by the finest methods of construction are guarantees of built-in service and lower operating cost with Globe Stitched Canvas Belting.

MANUFACTURERS OF:

WHITE SOLID WOVEN COTTON BELTING • PRESS-CURED KANRY-TEX BELTING • WATERPROOF AND WAX TREATED BELTING • HYCAR BELTING • NEOPRENE BELTING • PLASCELL BELTING • CELLULOSE BELTING • STITCHED CANVAS BELTING • ROUND BRAIDED ENDLESS BELTS • HEVALOID ENDLESS BELTS • WOVEN ENDLESS BELTS • CLEANER AND SIFTER BRUSHES • WEBBINGS • HOISTING SLINGS • BELT DRESSING

GLOBE

GLOBE WOVEN BELTING CO., INC.

1400 CLINTON STREET • BUFFALO 6, NEW YORK

KNOWN FOR QUALITY THE WORLD OVER

Packages & Products

New Pizza Crackers

Pizza-rino, a bite-sized pizza sandwich is marketed by King Kone Corp. Fifteen of the tasty sandwiches are packed in a long film bag.

Newest product to appear under the Old London label, the Pizza-rinos are designed primarily for snacks and hors d'oeuvres.

New Frozens Debut

Spotlighted at Eastern Frosted Food Assn.'s Prepared Frozen Foods Day last month were some hot new frozen products:

- La Rosa veal scallopini, veal cutlet a la parmigiana, chicken cacciatore, and baked ribbed lasagna.
- Chilean langostinas (miniature lobsters) packed 60 bite-sized tailes to the carton by Continental Seafoods, Inc.
- Twin pack of Swanson's new cocoanut pies (each 5-oz.).
- Fruit punch of Frosted Fruit Products made of orange, lemon, lime, guava, boysenberry, plum, and passion fruit.
- Raspberry-lemonade blend of Skiwasser Corp.

New Product Shorts

Meringue Mix marketed under General Mills' Betty Crocker label requires only the addition of water.

Instant White Sauce called Sauce-Quik is latest food service development by Ac'cent International.

Chiffon Pie Fillings of General Foods' Jell-O line now include lemon, strawberry, and chocolate flavors.

Turkey Roll distributed under Armour & Co.'s Star Label is an 8 to 10-lb. sandwich-size roll of white and dark meat in a moisture-proof casing.

Frozen Entree additions to Libby, McNeill & Libby family are macaroni and cheese, tuna and noodles.

Pickle Product called Krink-L-Chips is described by H. J. Heinz Co. as "a candied, crosscut pickle."

Sixth Flavor to be added to Swans Down instant cake mix line is orange-cocoanut.

← For more data, circle this page number on card at back

GAYLORD TRIMS
YOUR PACKAGING COSTS

Gaylord's approach to packaging doesn't stop with the corrugated box itself. We take a fresh look at your entire packing and handling cost picture, then tailor a program to your exact measure.

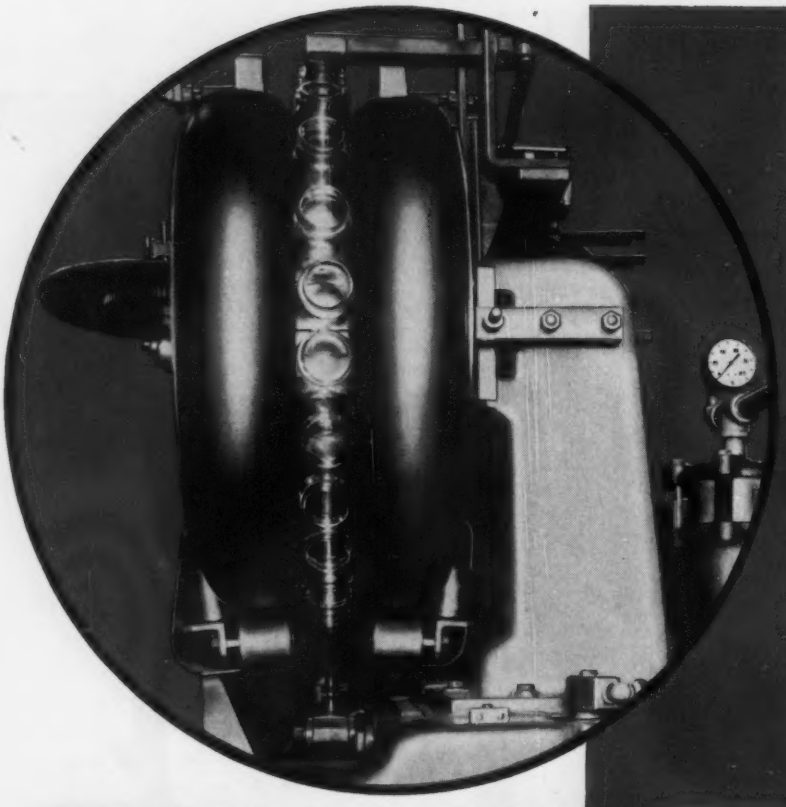
Regular cartons in big volume . . . engineered packaging . . .
your nearby Gaylord man knows both. And he is cost-conscious either way.

GAYLORD
CONTAINER CORPORATION

Gaylord Boxes

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**



IT'S MORE *gentle*

A pair of softly resilient air inflated Neoprene tubes hold the containers firmly yet gently, from start to finish.

MORE *speedy*

Continuous operation eliminates transfer time — containers go straight through without interruption of pace.

MORE *flexible*

Because the inflated tubes automatically adjust to fit a range of sizes, change parts are eliminated.

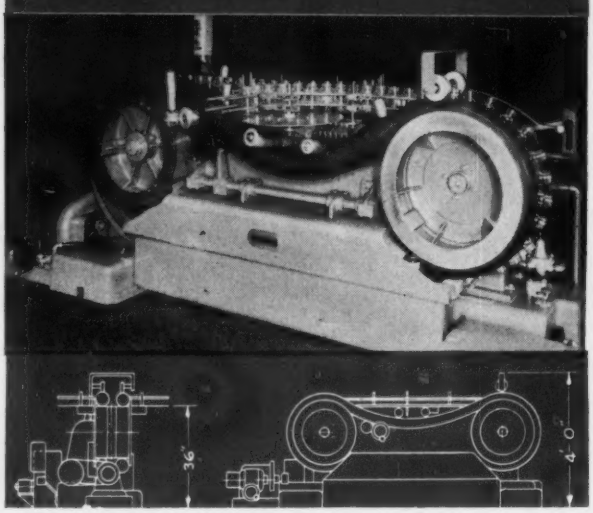
PNEUMACLEAN

For wide mouth containers and funnel neck bottles

HERE'S a cleaner without a single dial, star, helix or screw feed in its entire design. There are no cams, no links, no rocking nor reciprocating motions. No wonder PNEUMACLEAN is so far ahead of the field in automatic air cleaning.

The containers ride an endless air cushion that holds them safe and sure, and carries them swiftly through the cleaning operation. They're inverted for the cleaning air blast, righted again and out they go, without even a momentary pause. Speed, up to a fabulous 500 per minute, depending on size.

Bulletin 134 has *all* the information on this smoothest, speediest method of inverted air cleaning. Your copy is waiting — just write for it.



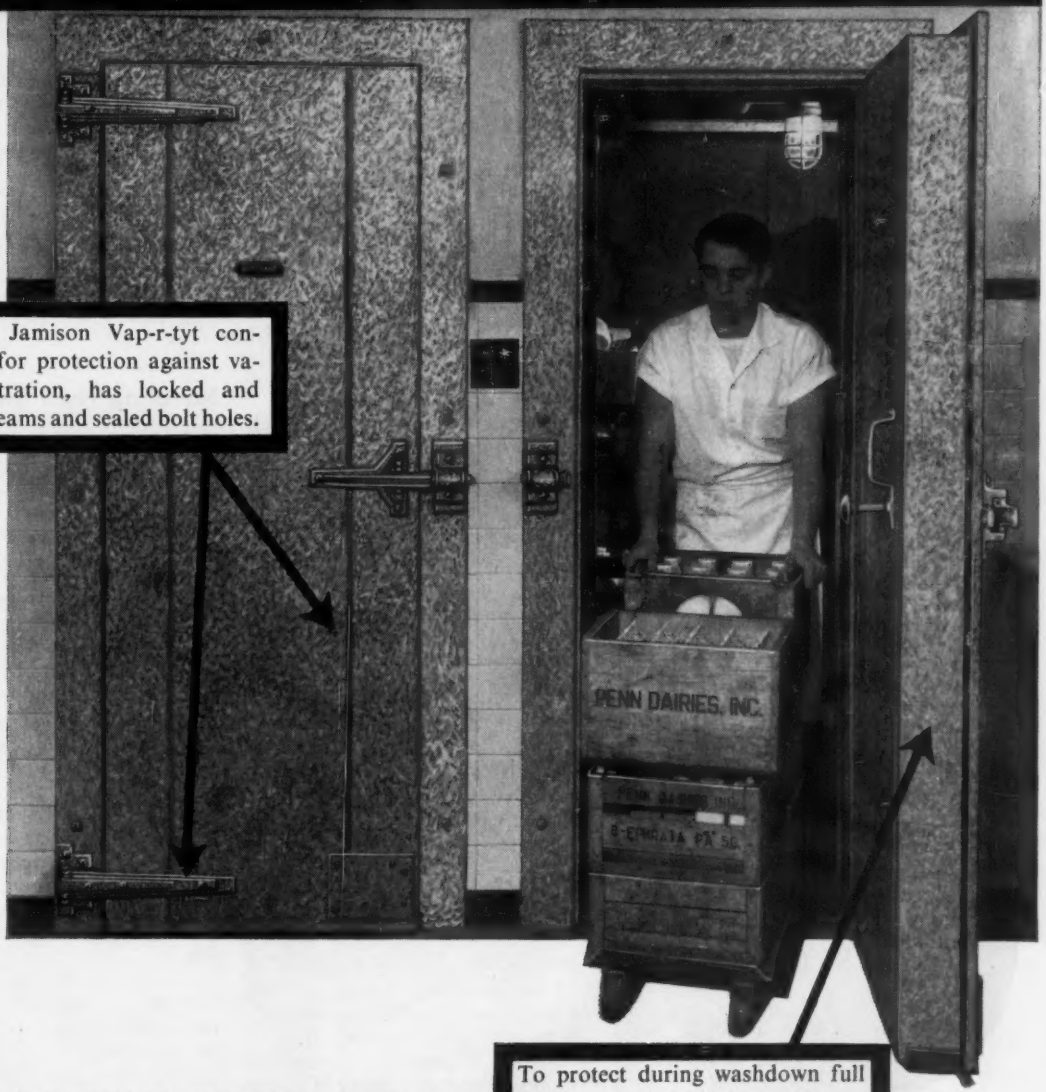
PNEUMATIC SCALE CORP., LTD., 91 Newport Avenue, Quincy 71, Mass. *Also: New York; Chicago; Dallas; San Francisco; Los Angeles; Seattle; Leeds, England.* Subsidiaries: *Delamere & Williams Company, Ltd., Toronto; Carbert Mfg. Co., Inc., Cambridge, Mass.*

★PNEUMATIC

Packaging and Bottling Equipment

← For more data, circle this page number on card at back

Jamison booted VAP-R-TYT* metal clad door protects against wet floors, frequent washdowns, high humidity

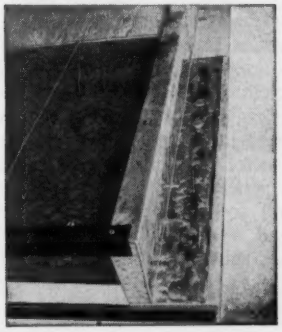


Exclusive Jamison Vap-r-tyt construction for protection against vapor penetration, has locked and soldered seams and sealed bolt holes.

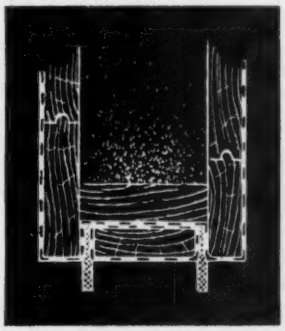
To protect during washdown full length metalcladding on frame, front and back of door.

For protection during washdown and when floors are wet a metal boot is formed by applying wrap around metal with locked and soldered seams to all sides and bottom including concealed surfaces.

(*frame*)



(*door*)



*VAP-R-TYT is a Jamison trademark

JAMISON

ENGINEERED DOORS

Jamison Cold Storage Door Co., Hagerstown, Md.

For more data, circle this page number on card at back →

This Yarway team has scored high—over a million installed on all types of steam equipment. Stocked and sold by 270 Industrial Distributors. For free Steam Trap Book, write YARNALL-WARING CO., 127 Mermaid Ave., Philadelphia 18, Pa.

go YARWAY with confidence

COMMENTS & QUESTIONS

Praises Contribution To Work Simplification

Dear Editor:

FRANK BUSSE

I read Frank Busse's article (Puts Your Problems to Rout) with a great deal of interest. I want to compliment you on the way you arranged this article.

The philosophy expressed is not only thought provoking, but is very practical and down to earth.

I have sent reprints of the article to all of our supervisors, as I know that each of them will get a great deal out of it. In these days, work simplification and cost reduction may well spell the difference between profit and loss of any organization.

My compliments for this timely, worthwhile contribution to work simplification.—*Don F. Copell, Vice-President, Wagner Baking Corp., Newark, N. J.*

What More Can You Say?

Dear Editor:

You are publishing a very fine magazine that is doing the food industry a fine service.—*Jay B. Close, Sacramento, Calif.*

Dear Editor:

I am advocating that all members of this association become subscribers to your magazine.—*C. R. Zimmermann, Technical Consultant, National Preservers Assn., Washington, D. C.*

Of Particular Interest

Dear Editor:

Would it be possible for me to have 30 copies of the FE article, Selling Approach: Key to Winning Shelf Space? We would like to distribute them to our men.

We found the article very informative, and are sure our representatives will gain much from the contents.—*F. W. Moore, Director of Marketing, National Sales Manager, Mrs. Paul's Kitchens, Philadelphia.*

No Restriction on Deionizer

Dear Editor:

The article, Ion-Free Beer Boosts Sales, which appeared in your February issue, stated that we have an agreement that would prevent us from promoting the sale of our equipment for the use described in that article under certain circumstances.

This is incorrect. We are very interested in promoting the sale of equipment for this application.—*A. W. Michalson, Sales Manager, Illinois Water Treatment Co., Rockford, Ill.*

Handling Fluid Sweeteners

Question—Can you give us pointers on selecting proper equipment to handle liquid sugar and corn syrup? We are considering use of these ingredients, but have had no experience with them.

Answer—A big advantage of these sweeteners is that they can be handled entirely in closed systems of piping and tanks. Syrups may be shipped in metal drums, but greater economies result if you can receive them in tank-truck or car-load quantities.

You will then need an unloading hose and suitable pump, preferably a rotary, positive-displacement type. Pump, connecting pipe, and storage tanks may be of iron or steel. It is usual practice to protect tanks with an interior coating, such as Tropolite.

To curb mold growth on the liquid or on exposed tank surfaces, ultra-violet lamps should be installed in liquid-sugar tanks. Breather pipes should have small exhaust blowers and air filters.

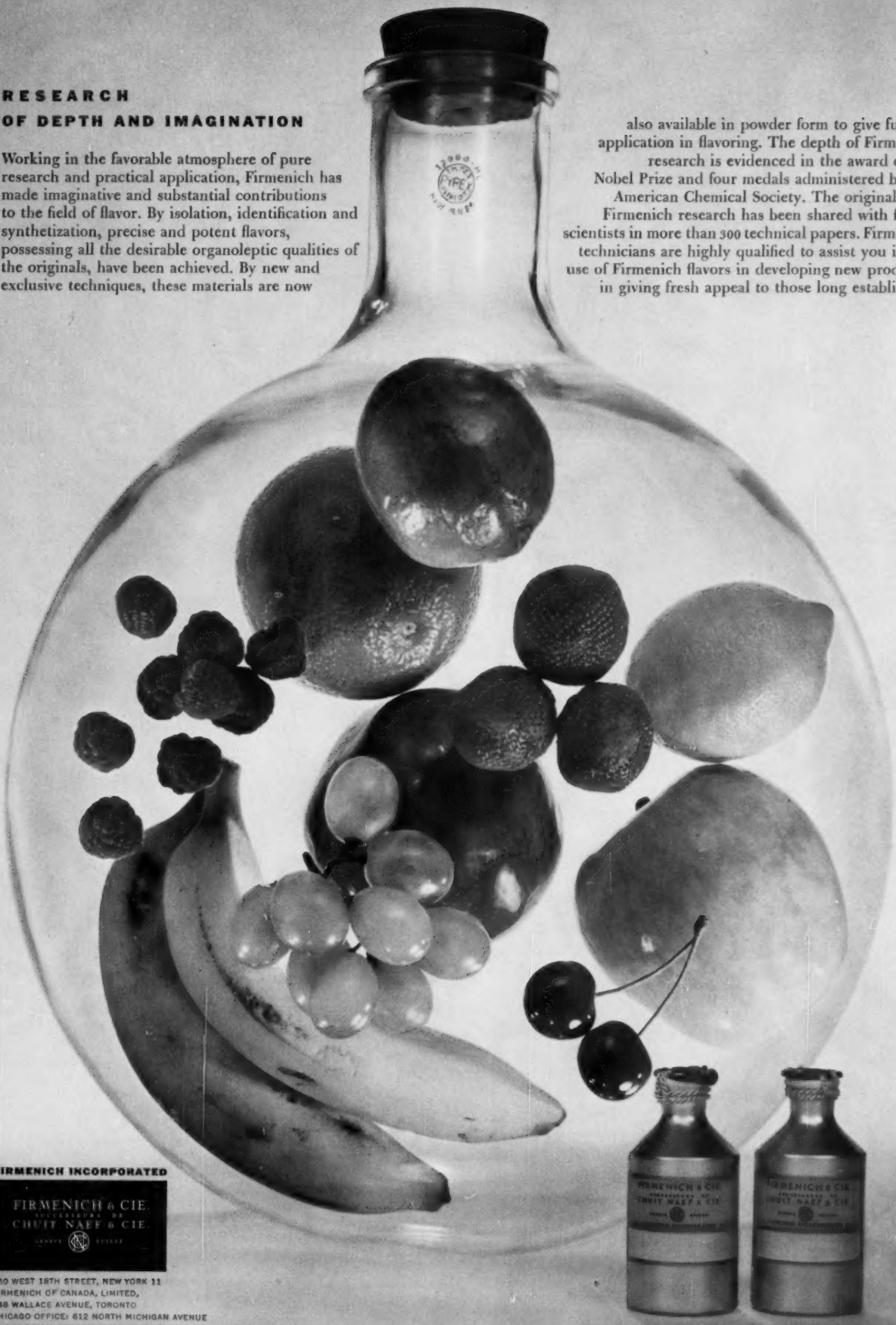
Corn syrup is higher in solids than liquid sugar, thus is less subject to mold growth. However, it is more viscous and should be held at about 90F. in tank and pipelines. Install check valves to keep these lines full at all times.

Sweeteners may be pumped to point of use through pipelines equipped with meters, which enables close control of quantities used.

This general information may enable you to make preliminary layouts and cost estimates. But we recommend that you consult suppliers of these syrups for further suggestions.

RESEARCH
OF DEPTH AND IMAGINATION

Working in the favorable atmosphere of pure research and practical application, Firmenich has made imaginative and substantial contributions to the field of flavor. By isolation, identification and synthetization, precise and potent flavors, possessing all the desirable organoleptic qualities of the originals, have been achieved. By new and exclusive techniques, these materials are now also available in powder form to give further application in flavoring. The depth of Firmenich research is evidenced in the award of the Nobel Prize and four medals administered by the American Chemical Society. The originality of Firmenich research has been shared with fellow scientists in more than 300 technical papers. Firmenich technicians are highly qualified to assist you in the use of Firmenich flavors in developing new products, in giving fresh appeal to those long established.



LOEBEL

FIRMENICH INCORPORATED

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SUCCESSEURS DE
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They're filtered with

Johns-Manville CELITE

diatomite filter aids

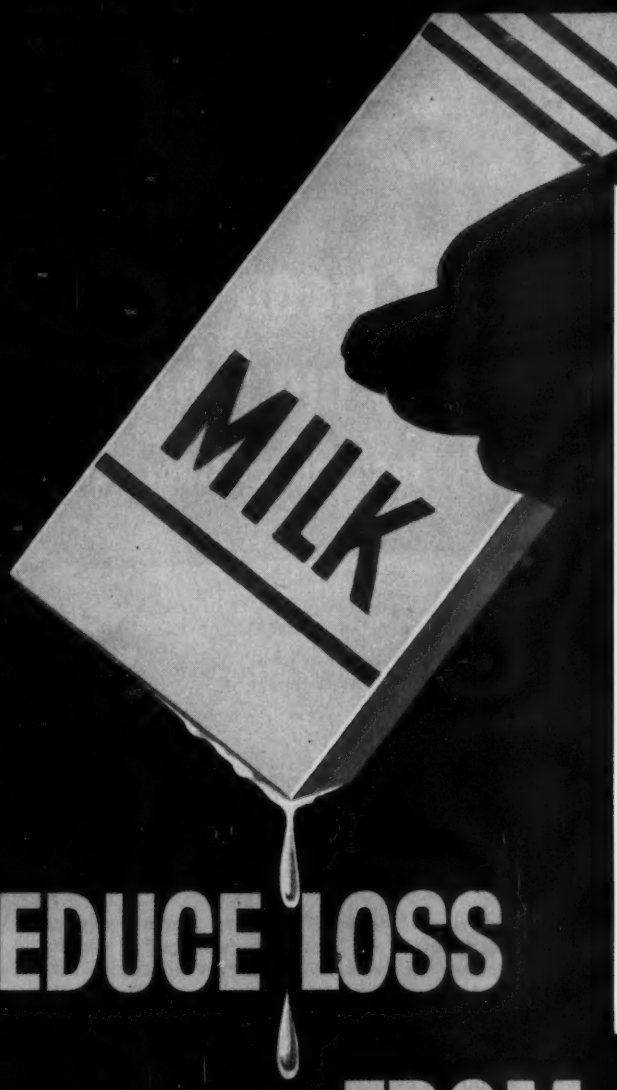
No matter what type of oil you are filtering, you'll get the high clarity and the sparkling brilliance you *and* your customers demand with Celite*. In addition, for every degree of clarity, Celite gives you the fastest flow rates obtainable.

Many oil chemists have found that the quickest and easiest way to solve a filtration problem is to call a nearby Celite field engineer. He can tell you which of Celite's nine standard grades will best meet your needs. Or he may recommend a special grade.

Why not call him today for a no-obligation analysis of your filtration operations. Or write Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario.

JOHNS-MANVILLE JM PRODUCTS

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products



REDUCE LOSS FROM LEAKERS?

▲ DETAILS ON BACK

YES — and *soon!* Tests show that polyethylene coated board may virtually eliminate the costly problem of dairy container leakage. Though polyethylene coated dairy containers are not on the market and are still undergoing development, here's why the food and dairy industries are looking to polyethylene as the most promising coating material since the advent of paperboard packaging:

• **POLYETHYLENE FILM OFFERS UNUSUAL TOUGHNESS**—Polyethylene adheres to the board in a tough, unbroken film that can take punishment; the coated stock is virtually leakproof. Polyethylene retains its toughness at subzero temperatures. It does not flake or crack, so there is no contamination of dairy or food products from the container coating.

• **BETTER HEAT SEALS** — Polyethylene coated stock lends itself to more dependable sealing — tougher seals.

• **SUPERIOR MOISTURE AND GREASE RESISTANCE** — Polyethylene forms a highly resistant film that improves the shelf life and appearance of your containers.

• **BETTER APPEARANCE** — Polyethylene coated stock has less tendency to bulge. Coatings are smoother, more adherent. Container board can be printed beneath or directly on the polyethylene coating. Polyethylene coatings have superior gloss and scuff resistance.

Polyethylene coated board has been produced for many years. Polyethylene coated dairy containers in tetrahedron form are in use in many countries abroad, and manufacturers in this country are presently developing new poly-coated containers. Polyethylene coated board shows every sign of becoming a leading container material of the future. Ask your container supplier about it.

U.S.I. makes PETROTHENE® polyethylene resins used for coated food board and dairy containers. PETROTHENE resins are also used in making packaging film and molded polyethylene containers.

U.S.I. INDUSTRIAL CHEMICALS CO.
Division of National Distillers and Chemical Corp.
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No matter what type of oil you are filtering, you'll get the high clarity and the sparkling brilliance you *and* your customers demand with Celite*. In addition, for every degree of clarity, Celite gives you the fastest flow rates obtainable.

Many oil chemists have found that the quickest and easiest way to solve a filtration problem is to call a nearby Celite field engineer. He can tell you which of Celite's nine standard grades will best meet your needs. Or he may recommend a special grade.

Why not call him today for a no-obligation analysis of your filtration operations. Or write Johns-Manville, Box 14, New York 16, N. Y. In Canada, Port Credit, Ontario.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products

JOHNS MANVILLE JM PRODUCTS

REDUCE LOSS FROM LEAKERS?

DETAILS ON BACK

15 point board with a 14.4 lb. (1 mil) coating of PETROTHENE® 205 polyethylene resin. PETROTHENE coatings can be drawn down as low as 1/10 mil thickness.

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YES — and soon! Tests show that polyethylene coated board may virtually eliminate the costly problem of dairy container leakage. Though polyethylene coated dairy containers are not on the market and are still undergoing development, here's why the food and dairy industries are looking to polyethylene as the most promising coating material since the advent of paperboard packaging:

• **POLYETHYLENE FILM OFFERS UNUSUAL TOUGHNESS**—Polyethylene adheres to the board in a tough, unbroken film that can take punishment; the coated stock is virtually leakproof. Polyethylene retains its toughness at subzero temperatures. It does not flake or crack, so there is no contamination of dairy or food products from the container coating.

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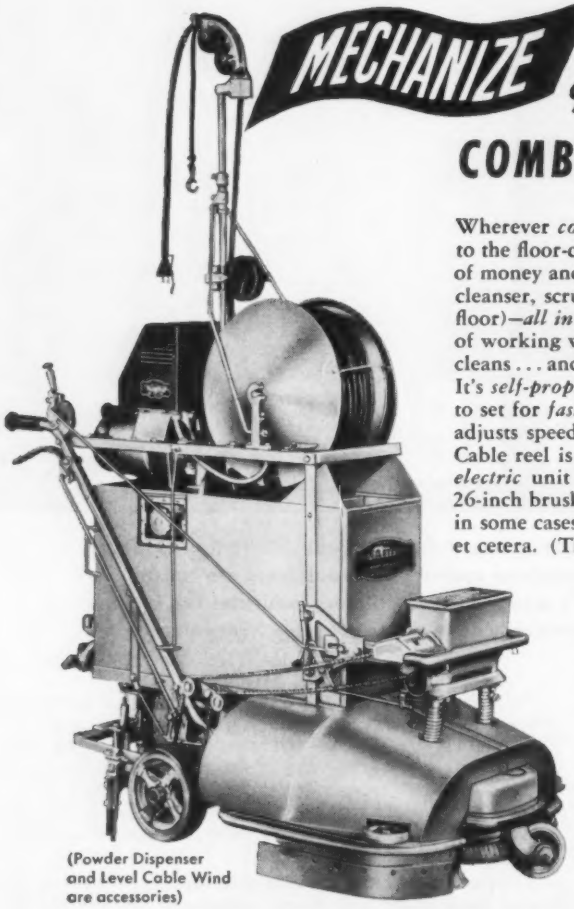
Let's not clean away dollars and man-hours with costly, inadequate floor care

MECHANIZE *your floor-cleaning with a* COMBINATION SCRUBBER-VAC!



(Powder Dispenser and Level Cable Wind are accessories)

Wherever *combination-machine-scrubbing* is the practical solution to the floor-cleaning problem, any lesser, slower method is wasteful of money and manpower. A *Combination Scrubber-Vac* applies the cleanser, scrubs, flushes if required, and picks up (damp-dries the floor)—*all in one operation!* Maintenance men like the convenience of working with this single unit . . . the thoroughness with which it cleans . . . and the features that make the machine simple to operate. It's *self-propelled,* and has a *positive* clutch. There are no switches to set for *fast* or *slow* — slight pressure of the hand on clutch lever adjusts speed to desired rate. The powerful vac performs quietly. Cable reel is self-winding. *Finnell's 213P Scrubber-Vac* at left, an *electric* unit for heavy duty scrubbing of large-area floors, has a 26-inch brush spread. Cleans up to 8,750 sq. ft. per hour (and more in some cases), depending upon condition of the floors, congestion, et cetera. (The machine can be leased or purchased.)

Finnell makes *Scrubber-Vac Machines* in a full range of sizes, and *gasoline* or *propane powered* as well as *electric* models. From this complete line, you can choose the size and model that's exactly right for *your* job (no need to *over-buy* or *under-buy*). It's also good to know that *a Finnell Floor Specialist and Engineer is nearby* to help train your maintenance operators in the proper use of the machine . . . to recommend cleaning schedules for most effectual care . . . and to make periodic check-ups. For demonstration, consultation, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 5705 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

FINNELL SYSTEM, INC.

Originators of Power Scrubbing and Polishing Machines

Everything FINNELL for Floor Care

BRANCHES IN ALL PRINCIPAL CITIES

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Engineer Growth-Reading Into Your Management

Too busy to read? We hope that your answer—and that of your key men—is a sincere "No". A "Yes" is definitely detrimental to progress, both of your company and your men.

A high percentage of what you know today came from the printed page, either directly or indirectly. Experience is a great teacher. But it can be no broader than your own business history. And it doesn't adequately prepare you for a changing future.

As a management man, you are hard up against the critical problem of training men for greater responsibility. Practically all progressive firms are conducting management training today. Many send selected employees to college for special courses—to colleges that teach primarily from the printed page. Costly way to get men to read their way to promotion!

Planned reading will upgrade men

We don't mean to belittle such training. But individuals can be upgraded on the job by planned, or engineered, reading.

You probably know what you and your men must learn to become still more valuable to your business, and where to find it. If not, reading counselors or consultants can advise you.

Included in this reading will be selected books. But for men in industry, there is no substitute for the magazines covering their fields. Nowhere else are the trends so well pointed up, the advanced methods and facilities so quickly presented, the know-how to solve current and future problems so adequately outlined.

The editors of a good business or industrial magazine sleep, eat—yes, sometimes drink—their field. Through extensive travel, outside contacts, widespread news sources, a daily deluge of mail and phone calls—plus a steady stream of visitors to their offices—editors become veritable funnels of valuable information. And every one worth his salt is dedicated to serving his industry by passing such information along.

It is this combination of information and dedication that makes leading magazines forceful implements of timely education for industrial progress.

Yet in terms of time and money, their cost to you is peanuts. You can continue the schooling of a man at the expenditure of a few hours of his leisure time a month and a subscription bill for a very few dollars a year. Training courses were never so cheap—or so convenient to the trainee.

"No Time" is alibi for complacency

The occasionally heard "no time to read" is an asinine alibi for comfortable complacency. One might as well say that he has no time to solve today's problems nor plan tomorrow's progress. For these, time must be made. Reading helps to do them—better and faster. It saves time, and mistakes.

You shouldn't let the reading habits of your key personnel—or the men you are training for bigger responsibility—be lackadaisical or haphazard. Men who won't read are but little more up to date in this fast-moving industrial world than are those who can't read. And you don't put illiterates into key spots.

Reading about industry trends, progress, and problems is GROWTH-READING—growth for the man and growth for his company.

If your competitor's men do growth-reading and yours don't. . .?

Better to take advantage of engineered reading.

are you considering a food aerosol?

A technical assistant in the D&O Laboratory demonstrates the filling of a food aerosol with nitrous oxide.

THE POTENTIAL in the field of food aerosols has long been recognized ... and with it the need for compatible flavors. To meet this newest of food industry challenges, D&O has established a special section of the Aerosol Testing Lab for experimentation with pressure filling food products. Nitrogen, nitrous oxide and carbon dioxide/nitrous oxide filling equipment is available for the convenience of food processors interested in entering this expanding area of their industry. These facilities, added to D&O's traditional knowledge and experience in the flavor field, are yours on request. See the aerosol food display at the D&O Booth during the coming I.F.T. Convention in Chicago.

D&O ESTABLISHED 1798 *Essentially for You*

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"Why not get all decision-making people at Pillsbury to specifically emphasize their thinking in terms of profit and revenue?"

PRESIDENT PAUL S. GEROT
Of Pillsbury Mills, Inc.

10-M—Potent Way to Boost Profits

Named for $10 million added revenue Pillsbury is targeting, program harnesses cost-cutting and money-making ideas of company decision makers in drive to ease squeeze

THE NARROWING of food-industry profits became acute last year. For though sales generally rose, the rewards slowed to the static or actually declined.

Food firms, therefore, have embarked on all-out efforts to find ways of reducing costs and so boost their depressed profit margins.

How to promote additional revenue for fiscal 1958 was the big problem that faced President Paul S. Gerot at a Pillsbury Mills executive council meeting. And after reviewing the "F-58" plans with management, he sparked his salient idea (quoted beside photo).

Result was the birth of a special club of Pillsbury decision makers all bent on gathering ideas and mounting projects with the aim of producing $10 million additional revenue for F-58.

This "10-M" plan, as it's called, definitely isn't one of those collegetry ideas kept alive by promotional-minded staff men. Rather, it's a solidly founded move with the specific objective of upgrading F-58 projects over the official fiscal ranges. And taken into account is Pillsbury's "hard-core" business thinking, which reflects the cost-conscious measures already in effect.

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"

In some cases, projects instituted under 10-M aim at increasing revenues through greater sales, productivity, etc. In other cases, projects are intended to contribute to revenue through cost-cutting means.

These two types are actually opposite sides of the same coin, the object being to increase the spread between "what comes in and what goes out."

Big Strides Already

With the 10-M program only several months old, 433 projects had been activated. Estimated revenue contribution of these projects during fiscal '58 is $6,993,825. In addition, 10-M'ers have worked on 107 projects of the type which can't be gaged in terms of F-58 dollar contribution. However, it's felt that these will pay off in increased revenue over the next few years.

One of the president's first reports to the 10-M'ers mentioned new projects running over $1½ million in one large company manufacturing plant. In a single staff area, 80 projects, with a total value of $858,000, were reported.

Club members recognize that all projects won't "pan out". But they do expect the 10-M program to substantially contribute to revenues.

Now to two examples of the projects:

1. To reduce expense of telephone and telegraph communications by about $65,000. Time-table: Saving of $5,000 monthly starting Oct. '57, with step up to $10,000 monthly for period Jan. to May '58.

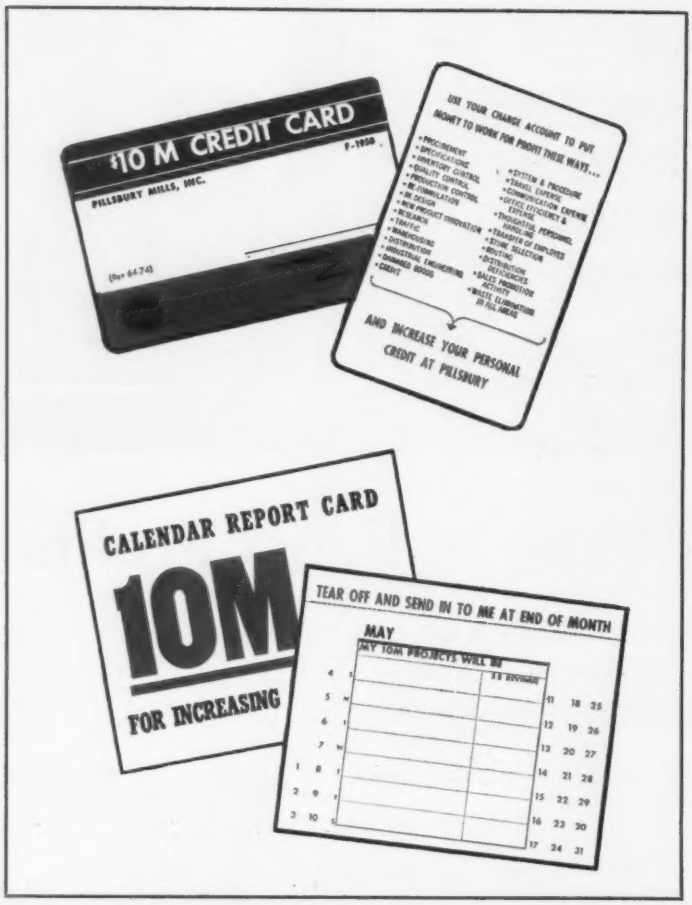
2. To improve communications in the grocery products division to conserve an estimated $50,000 in the '58 fiscal year, beginning with a $10,000 saving in January.

In the "brainstorming" for ideas, the participants are not limited merely to considerations in their own spheres. It was the public relations department that came up with the idea for economizing on telephone and telegraph communications. And it worked the plan out with accounting and office service.

Projects are most clearly demarcated in production areas. In short, outstanding force is exerted by 10-M at the plant level.

The general procurement department, which purchases ingredients other than wheat and also packaging materials, is a headquarter's staff group that has come up with many good money-saving ideas.

FOOD ENGINEERING


$10 M CREDIT CARD
PILLSBURY MILLS, INC.
F-1958
USE YOUR CHARGE ACCOUNT TO PUT MONEY TO WORK FOR PROFIT THESE WAYS...
AND INCREASE YOUR PERSONAL CREDIT AT PILLSBURY
CALENDAR REPORT CARD
10M
FOR INCREASING
TEAR OFF AND SEND IN TO ME AT END OF MONTH
MAY

COLORFUL REMINDERS help spark extra-profit program. Top: "Credit card" given Pillsbury 10-M'ers lists 26 working areas where they can make drive pay off. Above: Handy calendar supplies tear-out leaves for reporting new projects and the revenue they'll contribute toward 1958 goal.

These generally take in the modifying of materials specifications without sacrificing quality.

Also playing a role in "spec" changes are many other departments, such as quality control, sales, production, and research and development.

In sales, the 10-M projects tend to deal with implementations that are less sharply defined than those in production, purchasing, or research and development. And, of course, it's generally more difficult to evaluate these sales projects, which may cover increased distribution of product, greater volume, reductions in returns of damaged goods, etc.

Industrial engineering's 10-M'ing searches beyond its normal activities of streamlining operations to gain new cost-cutting efficiencies. Similarly, the systems and procedures department actively looks for ways to improve office clerical tasks.

Pillsbury's public relations department helped get the ball rolling—primarily by playing a communications role. After drawing up a list of rules explaining how the program operates, it stressed the building of membership. It prepared and submitted letters and reports to line-operating management people, from vice-presidents in charge of divisions to department managers.

It has devised such reminders and attention-getting items as a 10-M money clip, projects report card, and pocket calendar. It continually "feels the pulse" of 10-M activities, reporting to the president whenever the program calls for special top-office participation or decisions.

The membership automatically includes all corporate officers as official representatives. These officers appoint the local captains—Pillsbury employees, in manufacturing, sales, and staff groups at headquarters, who make profit-promoting or expense-reducing decisions. In turn, these captains select others down to first-line supervisors.

How 10-M Is Organized

Some 350 members comprise the club, which has Paul S. Gerot spearheading as president, J. L. Rankin in the post of secretary, and T. Hanold as treasurer. Associated with them on the executive committee are three executive v.-p.'s.

Reporting to this committee are the local chapter presidents. Such chapter heads are the leaders who have taken notable parts, as in unifying the activities of 10-M members at their specific locations and in reporting the progress.

The actual selection for membership in a chapter is fundamentally based on a man's contribution—in bringing valuable interaction, stimulation, and mutual benefit to the members and the group—rather than upon his divisional or job status.

Each chapter member is encouraged to—

. . . set his own goals for increasing revenue and reducing expenses, and report accordingly to his group.

. . . estimate, or assist in estimating, the savings or dollar-revenue possible through accomplishment of the specific projects.

. . . gage the time required for achieving the suggested project goals.

The local group meets regularly each month, and oftener when required. Procedures are reported at these gatherings to keep the group up-dated on activities. Projects and progress are carefully considered. And individual successes are specially recognized.

A chapter president, such as a plant manager, will collate a list of projects, estimate the time they'll require, and gage their approximate revenue contribution above figures originally ranged. He will submit this data to the headquarters v.-p. in charge of the specific department to which the plans are pertinent.

Such reports then go to public relations, where they are consolidated in summary form for the submission to the president and the three executive v.-p.'s.

To date, the 10-M'ing for F-58 has "gone strong." And from its final evaluation will come the following concepts for F-59 action.

—*End*

Fool-Proof Sanitation—5-Point Plan

Here are pest-preventive techniques that streamline your handling and storage of raw materials, equipment maintenance, and area cleaning. Management support, employee cooperation accented

"When your sanitarian submits his program, back him to the hilt."

THERE ARE NUMEROUS payoffs—food processors have discovered—in systematic preventive sanitation.

It ups product quality and production efficiency, pumps new enthusiasm into the sales force, reduces customer complaints, and greatly simplifies compliance with FDA regulations.

The foregoing might be termed direct benefits of a successful sanitation program. An important indirect benefit is the high morale of employees impressed with their plant's good sanitation. They usually spread the word to family and friends.

Finally, management derives the added satisfaction of having fulfilled its moral obligation to the public.

We will detail a five-point approach to effective preventive sanitation for your plant. But first, here are vital preliminary considerations:

Management's Role

The modern concept of preventive sanitation embraces much more than mere control of insects and rodents. Actually, it's a 'way of life' whose standards conform not only to legal requirements, but to the high level of sanitation in your own home. Good sanitation practices must be studied, cultivated, and carried out by everyone in your plant, from company president to newest employee.

In that connection, employee cooperation is the most important single factor in success of your program. Presence or absence of contamination in your products will depend largely on employee care in handling ingredients and cleaning of plant and equipment.

Having chosen preventative sanitation for your plant, next step is to assign plant-sanitation responsibilities to someone who is part of management. In very large plants, the sanitarian probably will be occupied full-time. In smaller plants, he will often be a supervisor with other duties as well.

"See that your raw materials meet sanitary specifications."

Regardless of your plant's size, remember that your attitude makes or breaks the program. If your sanitarian is to succeed in his efforts, he needs your full support. When he submits his program and recommendations, back him to the hilt.

Remember, too, that under the law you are responsible for purity of your products. Furthermore, the law considers foods to be adulterated if they are prepared or held under conditions whereby they may have become contaminated.

In other words, an inspector need not find actual contamination of your product, but only the possibility of contamination, to cite your plant for possible prosecution.

Here is the five-point (plant-flow) program. Use it as a guide in organizing your operations, and giving them the management push they need to succeed.

I—RAW MATERIALS

In ordering raw materials, your purchasing agent must, so far as possible, specify standards of sanitation as well as acceptable quality.

J. STANLEY and A. E. ARMSTRONG
Staff Consultants, J. Carl Dawson Associates, St. Louis

"Remember—a sanitary finished product cannot be manufactured from an insanitary raw material"

Check incoming materials for possible contamination, and refuse to accept contaminated or infested products. That way you'll greatly reduce the chance of contaminating your foods. If too many shipments from a given supplier fall below your standards, invite him to assist you in investigating the problem. If he can't correct the situation, find another source. Remember, a sanitary finished product cannot be manufactured from an insanitary raw material.

Here are six fundamentals relating to purchase and receipt of raw materials:

1. Determine the most desirable and sanitary type of package for incoming ingredients. Container must offer maximum resistance to contamination of goods in transit and storage.

2. Train personnel who purchase and receive goods to recognize contaminated raw materials and prevent their entering your plant.

3. Inspect trucks, rail cars, and outsides of containers for visual evidence of live or inert foreign material.

4. Develop acceptance standards and adhere to them rigidly.

5. Take samples of incoming raws for microscopic examination. If you do not have a laboratory, arrange with a competent commercial laboratory for this service.

6. Keep a written record of the sanitation inspection of all materials on arrival. This record is evidence of your diligence should you be called to a citation hearing.

II—SANITARY STORAGE

Create an unfavorable environment for rodents, insects, and microorganisms. Rats and mice like hiding places. Warm and moist spots are attractive to insects, mites, and molds.

Preventive sanitation eliminates harborages through these eight cleaning and storage practices:

1. Eliminate all dirt, rubbish, rodents, and insects, or evidence thereof.

2. Rodent-proof the storage area and screen it properly to prevent entry of flying insects or birds. See that all doors fit snugly and are kept closed except when they're in use.

3. Keep all storage 8 in. from the floor (on easily movable skids) and at least 18 in. from the wall. This not only creates unfavorable environments for pests, but facilitates thorough cleaning.

4. If your plant has double-wall structures, either open one side or seal both completely.

5. Remove dirt collectors such as old equipment, obsolete supplies, and junk from your food-storage areas. (If such storage is necessary, find a suitable area away from your plant.)

6. Inspect all packages before they are brought into the storage area. Do not store broken or damaged containers.

7. Paint a white border 18 in. wide around floor edges in all storage rooms (traffic-type paint, such as is used for street markers). The white

"Isolate 'vulnerable' areas from rodents and insects."

line serves as a marker for away-from-the-wall storage, also is ideal for inspection purposes. Check this line weekly, before it is cleaned, for evidence of rodent or insect infestation.

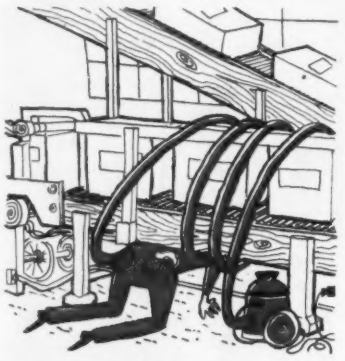
8. Re-inspect at weekly intervals all materials held in storage for more than two weeks, watching particularly for recent insect or rodent contamination.

III—HANDLING UNITS

Cash in on scientific discoveries in the field of economic biology.

For example, informed bakery operators know that the average life cycle of most cereal-infesting insects is about four weeks. By cleaning their material handling and production equipment every three weeks, they not only remove food residues but also insect eggs and larvae, thus breaking the cycle.

Obviously, if they wait five weeks to clean, they must deal with another



"Take special pains to clean the hard-to-get-at spots."

generation of insects. Efficient sanitation implies concentration of sanitation dollars on thorough, regular, and intelligent cleaning. It is not always the frequency, but the thoroughness of cleaning, that gives best results.

Here's a check list for keeping equipment in top sanitary condition:

1. See that all internal and exterior portions of your equipment are accessible for thorough cleaning. If your plant has a short length of screw conveyor, an elevator boot or head, or a storage bin that is not readily accessible, it may be overlooked during cleaning. This invites contamination.

2. Provide tight-fitting lids for refillable raw-material containers and ingredient cans, and keep them covered as much as possible. Empty them regularly so inside surfaces can be cleaned. Such containers should be of all-metal construction, with smooth inside surfaces and rounded bottoms.

3. If finely divided products, such as flour, are used, install a suitable device to act as an automatic inspector. A fine-screen sifter would be satisfactory. Place the unit as close as possible to the point where ingredients first enter production line. This final-checks the sanitary condition of raw materials before they can contaminate your products.

4. Thoroughly brush or vacuum-clean every container of ingredients before it is opened and dumped. Thus, dirt that may be in a bag seam or on outside of container will not

enter the production stream. Post prominent signs in appropriate places reminding employees to observe this precaution.

5. Consider spot fumigation as a supplement to your cleaning schedule to help keep the interior of handling equipment free of insects. This is particularly important with wooden units.

IV—PRODUCTION AREAS

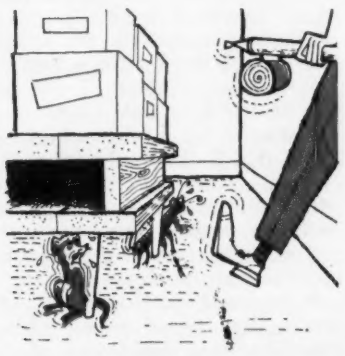
A basic rule in preventive sanitation is isolation of production areas, keeping them properly separated and closed off from garages, loading docks, maintenance rooms, and storage zones. Block off avenues of entry for dirt, insects, or rodents. Institute sanitary production practices to insure that your products stay free of contamination.

Dirt that accumulates in a food plant is largely nutritious dirt. Although it may look uninviting to you, it's a choice morsel to rodents, insects, and microorganisms. Therefore, such accumulations must be removed frequently and regularly.

Also, sanitary conditions in perimeter areas have a great deal to do with presence or absence of pests inside your plant. Perimeter sanitation is too often overlooked in trying to establish an effective inside-the-plant program.

Incorporate these 17 basic pointers in your routine:

1. Prevent spillage or accumulation of food scraps around the outside of your building.



"Never give them a place to hide."

2. Keep trash containers and garbage cans off the ground and covered at all times. Wash them thoroughly after each dumping.

3. Do not permit storage of lumber or other building materials against outside walls of your plant.

4. Control vegetation. Selective weed killers and soil sterilants eliminate unwanted growth economically.

5. Use an effective residual insecticide in outside areas where flies tend to congregate.

6. See that all outside doors are self-closing and snug-fitting.

7. Isolate production areas from the outside by use of screens, self-closing doors, fly-chaser fans, etc.

8. Do not use out-of-the-way corners of production areas for even temporary storage of obsolete equipment or supplies.

9. Paint a white line around borders of your production area. Use a floor marker similar to that in the storage room, and for the same purpose.

10. Provide adequate lighting. If employees can see dirt, they will be more likely to clean it up.

11. Where possible, raise production equipment off the floor so you can clean under it. When units cannot be raised, be sure they are tightly sealed to the floor. Insure that all portions of equipment are within easy sight and reach to facilitate thorough cleaning. Seal cracks, crevices, and holes in floors, walls, and equipment where dirt can collect, but cannot be cleaned out.

12. Have maintenance personnel keep all bearings and oil seals on equipment in good repair to keep lubricants away from food-contact surfaces.

13. Schedule regular cleaning of all production units, utensils, and plant surfaces. Your sanitarian will plan direct, and supervise this work.

14. Be careful with nesting or stacking of containers. This practice can transfer floor dirt from bottom of one container to inside of another.

15. Provide your employees with efficient cleaning tools. In any plant, one of the most important devices is a good vacuum cleaner with adequate capacity and suitable attachments. Only limited use of compressed air for cleaning can be tolerated.

16. Develop team work among production and cleaning personnel.

17. Supplement cleaning in production areas with proper use of residual insecticides. But see that no foods or food zones are contaminated by such sprays.

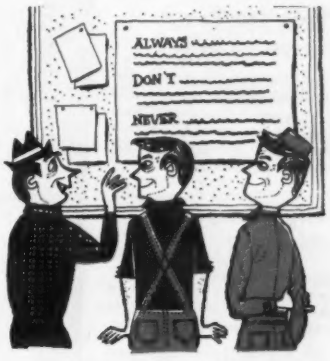
"Dirt in a food plant is largely nutritious. It may be uninviting to you—but it's 'choice' to a rodent"

V—WORKER DO'S & DONT'S

Through meetings, bulletins, posters, and close supervision, train employees to observe these sanitation practices. At times, food-plant personnel inadvertently indulge in careless and insanitary habits. Such tendencies can be curbed by stressing these 15 rules of employee conduct and personal hygiene:

1. Wash hands before returning to work.

2. Keep doors closed.



"Get your workers to cooperate."

3. Brush or vacuum bags and containers before dumping.

4. Keep materials away from the wall.

5. Don't smoke except in designated areas.

6. Keep containers covered.

7. Do not set batch containers on floor, use platforms.

8. Report to supervisor before going to work if you are ill or have open wound, pimple, or boil-like eruption on hands or arms.

9. Dress properly with clean clothing and head covering.

10. Use oldest material first.

11. Discard spilled or soiled products.

12. Keep lockers clean.

13. Use common sense. THINK!

14. Report any condition that could cause product contamination.

15. Do not take breakable beverage containers into work areas.

—*End*

KLENZADE

COMPLETE SANITATION PROGRAMS For All Food PROCESSING PLANTS

★ Tops for Tough Cleaning Jobs

Klenzade "CBS" Cleaner is the finest industrial detergent available. Superb balance and high wetting agent content provide excellent soil penetration, fat emulsification, and free rinsing.

★ High Temperature Cleaning

Klenzade Flash-Kleen is ideal for steam cleaning jobs. Strips "baked-on" soil residues quickly with the Klenzade Steam Cleaner.

★ Controlling Mineral Deposits

Klenzade Flash-Klenz removes and prevents lime film on canals, troughs, fillers, chutes, etc. Use the Klenzade Alternate System of Cleaning employing alkaline and organic acid detergents.

★ Chlorine Sanitization and Water Treatment

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Poultrymen Gage Trends, Techniques

In salient sessions at IAPI's Kansas City Fact-Finding Conference, experts declare that—

. . . SPECIALIZATION is changing the egg-supply picture. And this puts rising stress on use of scientific management.

For, such advanced management will be requisite in operation of tomorrow's large mechanized commercial egg factories.

The move to massive operations will take a toll. Many small egg dealers of today will either be big egg handlers of tomorrow or they will be out of the business. They won't be able, with their present methods, to compete with the efficient, specialized businessman.

Poultrymen, generally, will come to produce more uniform, higher quality eggs with less effort, by virtue of better birds and improved rations. And the trend toward fewer but larger laying flocks is seen continuing.

Shortly, we can expect most egg production to come from flocks of 2,000 to 10,000 birds, and there will be some gigantic operations—of 100,000 birds or more. The flocks will be serviced by fewer, but larger, breeder-hatcherymen and their respective agencies.

Producers will employ scientific management to turn out eggs to specification under contract. There'll be relatively few organizations handling eggs between point of production and retail outlet.

Operators will no longer 'produce to market' but rather will 'produce for a market,' with the accent on planning ahead.—*Dr. A. William Jasper, Cornell U.*

. . . CHAIN-STORE NEEDS call for very careful attention from producers and suppliers.

1. It would help stabilize the market if a good percentage of frozen fryers that are now ice-packed could be properly frozen at processor level. Simpler methods, with more mechanization, are called for to lower costs of preparing and handling such fryers, thus making possible an increased production.

2. Needed is an economical shipping container that will better protect tray-packed fryers and reduce weepage that now creates serious weight losses.

3. Chain buyers find good brands from the carefully-grading processors preferable to the government-graded.

4. Producers must be aware that a gradual increase in profits for retailers is in order. Poultry now accounts for a large percentage of total meat sales. The old below-cost retailing can't continue.—*J. H. Mueller, National Tea Co.*

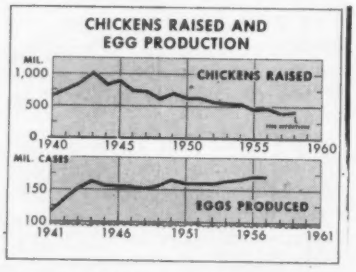
. . . IMMERSION FREEZING gives turkeys a uniform, desirable color particularly attractive to consumers.

In point is the experience of Central Cooperative Turkey Producers, Ellsworth, Iowa, which in the past season processed nearly its entire production—more than 10 million lb.—through the immersion tank.

Birds averaged about 35 min. in the 3½x12x54-ft. tank which contained a 21.6% salt brine maintained at −5 deg. F. Thus achieved was a "natural" color (rather than extreme white). Salt cost about 0.01c. per lb. of frozen product, and labor costs and yields were about the same as those with air freezing.

It was found best to do final freezing in blast tunnel rooms, where there is a good combination of air movement and low temperature (−20 to −40 F.). Birds coming from tank were promptly boxed and placed in the blast freezer.

Employing post type or telescopic-style boxes with the lids open, birds were usually frozen solid in 5-7 hr. Using full telescope boxes with lids closed, finished-freezing time



DOWN-TREND in chickens contrasts with up-trend in eggs. But '58 is seen bringing more chickens than '57's 394 million. Rise in eggs is credited to increasing proportion of pullets and better lay-rates per bird. (*Agricultural Marketing Service, USDA*)

ran 10-12 hr.—*H. H. Richey, Central Cooperative Turkey Producers.*

. . . PROPER ICING of poultry is now more vital than ever due to the additional time birds are kept on the road and in warehouses in today's broader distribution.

First requisite is to chill the poultry to 40F. before packing. Also important is the kind of ice used—since 10F. ice will do a better job than that at 30F.

Here, installation of an ice conveyor and box-closing machine is pertinent. This does away with the tedious ice-crushing and ice-scooping stations, and it conserves labor.

In the case of J. K. Southerland, Inc., Batesville, Ark., four men now handle icing and packing, whereas six were formerly required.

Further, the box closer makes it possible to put more ice in the containers, which can then be more uniformly closed to facilitate handling, stacking, and shipping. This means distributors receive birds in better condition, and there are fewer re-icing claims.—*C. Shaver, J. K. Southerland, Inc.*

. . . TRAY PACKING of birds can pose a number of problems—but difficulties can be avoided by adherence to best routines.

To insure a tender product, poultry shouldn't be cut the same day it's killed—whether or not it's sold chilled or frozen. And at all times, speed in handling and proper refrigeration are essential.

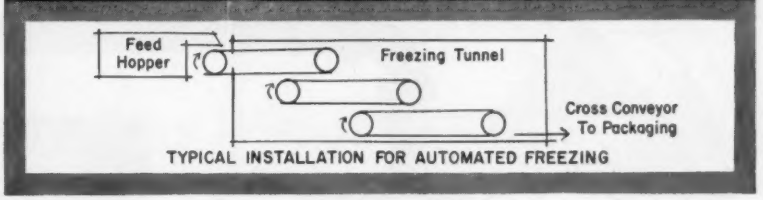
Shrink through loss of meat juices is a No. 1 consideration, and it's often more expedient to 'give away' a fraction of an ounce than to hobble packing operations with exact-weight checking.

To be noted is the fact that losses are less with knife-cutting than with use of a meat saw.

Further, shrink also relates to type of package, as well as to breed and size of bird, and skill of cutters and weighers. With fresh cut-up fryers, shrink can run a little over 6%, compared with weight of whole ready-to-cook birds. If this tray pack is frozen, the weight allowance is less and the shrink about 5%.

Most tray packing continues to be carried out at the retail level, with the bulk of retailers not fully realizing the costs involved. But seen coming are automatic units that will wrap 40 to 60 trays a minute, and these will cut costs and bring a gradual shift of tray packing from retailer to the processor.—*G. A. Heitz, Rockingham Poultry Marketing Cooperative, Inc.*

Cambridge WIRE MESH BELTS



TYPICAL INSTALLATION FOR AUTOMATED FREEZING

All-metal belts resist sub-zero temperatures in continuous processing

Continuous freezing on Cambridge Wire Mesh Belts helps maintain capacity production and assures more uniform processing. Open mesh permits free circulation of cold air through belt and around product for fast, uniform freezing. All-metal construction is rustproof, coldproof; cannot absorb odors; a quick spray or steam cleaning maintains sanitary requirements.

In washing, inspecting, baking and cooling operation, too, Cambridge belts cut operating costs and reduce manual handling. Here's why:

CONTINUOUSLY MOVING BELTS ELIMINATE BATCH PROCESSING for faster, more economical production.

OPEN MESH PERMITS FREE DRAINAGE of wash solutions, dirt, grit; allow free heat and air circulation for uniform baking, drying.

ALL-METAL CONSTRUCTION GIVES LONGER SERVICE: there are no seams, lacers or fasteners to break or wear.

SPECIAL ATTACHMENT AVAILABLE; raised edges and cross flights hold product on belt during inclined movement.

Talk to your Cambridge FIELD ENGINEER soon—he'll explain the many advantages of continuous food processing on Cambridge Wire Mesh belts. He'll recommend the belt size, mesh or weave—and the metal or alloy—best suited to your operations. You'll find his name in the classified phone book. Or, write for FREE 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.

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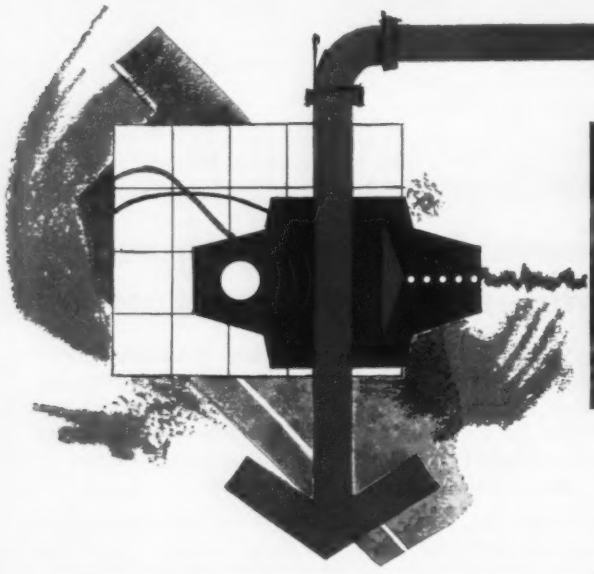

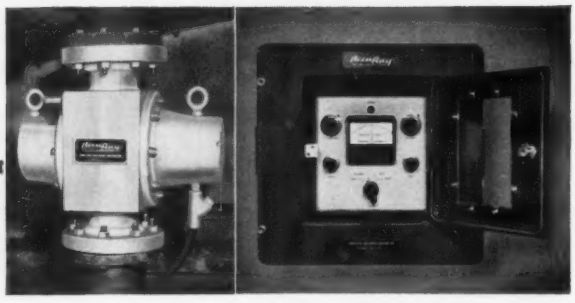

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Ole Sage Episode

"Do you really mean you've got to give 'em whatever they want?" Batt scoffed incredulously.

How Poll Your Workers *Without a Misfire?*

ED STRONG, Zenith Canning's superintendent, waved his hand for attention, as the Guff & Gripers luncheon drew to a close.

"I got left holding a question at the last meeting," he said, "and it's still red hot. Ole was saying that many companies have kept on using worker attitude surveys year after year, and that's the clincher proving they pay off. But are they really that good, Ole? Do they always pay off?"

"Skeptical, huh?" Ole Sage grinned. "Well, I say again that most of them prove very helpful to management—well worth their cost, as the companies will confirm.

"But, true enough, some do misfire—too many, in fact. They can do more harm than good and really spell trouble in those cases where nothing happens after they're run—where the company in no way discusses or even mentions to employees the results.

"This ties in, as I'll explain, with my feeling your study shouldn't be started without first getting complete approval of top management."

"How else could you run it?" belittled Batt Bulwark, works manager of Mull and Mull. "Where'd the money come from to pay for it if top management didn't approve?"

"More is required," Ole continued, unruffled by Batt's jibe, "than approval of the expenditure. Management must face up to *whatever* evolves from the survey."

"Do you really mean you've got to give 'em whatever they want?" Batt scoffed incredulously.

"Of course not," Ole answered. "Likely, employees will suggest and request some things that can't be granted at the time—and some that can't be granted ever.

"Think of it like this: Suppose one of your workers tells the boss, 'I want a transfer to a job in the warehouse.' Does the boss just turn his back and walk away? Of course, he doesn't. Instead, he says he'll try to have the transfer made, or else he explains why it can't be done now or why it can't be done at all.

"In the survey," Ole continued, "we ask employees to give factual information and to state their opinions. So when they give us their answers and views—and whether or not these turn out to be what we'd hoped for—our employees expect to know, and have a right to know, what our reaction is and what we may plan to do."

Ole paused for emphasis, then added: "And the sooner they hear from the company after they've given their answers, the better."

Ed spoke up: "But just how do you tell 'em? And how *much*? Can you cite actual cases for us, Ole?"

"Well, I know how quite a few food firms have followed up their attitude surveys," Ole acknowledged. He fished in his briefcase and tossed out an assortment of company publications, leaflets, and bulletins. "I brought a number of these sample reports along. Anybody who's interested may look them over."

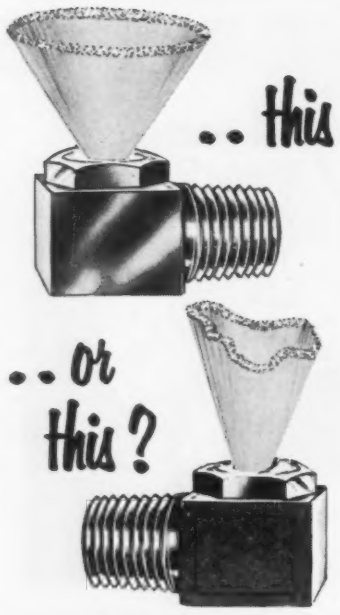
"Right now, we only have time for a detailed look at one of them." He held up a copy of the employee magazine published by a highly regarded midwest bakery. "In here," he said, "the company reports to its personnel on the results of a survey, and I'd like to read a little of it. It's an example of how one company makes excellent use of its worker publication to communicate a forthright report."

Ole turned the pages to find the place, then read:

If you are one of our salesman, you have probably completed your Job Questionnaire—stating what you liked and didn't like about your job, and making suggestions for ways to make your job even more satisfying. You are undoubtedly curious to know how your fellow company men feel about their jobs, too—and we'll be telling you about what the survey revealed.

The entire management and union representatives have taken a good look at the results. This turned out to be the most informative survey in which the company has ever participated.

IVAN C. MILLER
"Food Engineering"



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"You can compare results of your questionnaire with average results from other companies"

Your thoughts were so constructive that the research expert conducting the study turned in all the comments—unidentified of course—in his final report.

The survey turned up a number of interesting statistics. Over 90% of all salesmen surveyed expressed confidence in the decisions which management makes. And almost 100% were convinced that wearing a uniform is important to their work and stated they feel a certain distinction when they wear it.

"And now", continued Ole, "I am going to skip to the two pages which report on the likes and dislikes of these driver salesmen. Here's a page of likes. I'll read them:

1. Being my own boss most of the time. 2. Good pay. 3. Healthy outdoor work. 4. Working with the public. 5. Job security. 6. Opportunity for advancement. 7. The company itself. 8. Psychological rewards—customer satisfaction, respectable job, one with challenge that develops self-confidence. 9. Quality and type of the company products and company-provided sales helps.

"And now," said Ole, "I'll read the list of salesmen's dislikes:

1. Hours of work. 2. Soliciting new customers. 3. Quality and type of products. 4. Keeping customers satisfied. 5. Relief salesmen. 6. Supervisory assistance. 7. Lack of pension. 8. Adequacy of truck. 9. Company credit policy. 10. Days off.

"And here's management's concluding comments," continued Ole:

The major area for improvement is probably ours—a matter of grave concern both to your management and to your union. The company is gratified to note that the majority of the dissatisfactions you listed were factors which hindered you from doing a top job.

We are now working on these situations along with union representatives, to make changes which will resolve these difficulties. And, while it is our intent to improve working conditions, costs sometimes do not allow us to move as quickly as we would like. Additional information on just what progress we are making in each of these ten areas will be forthcoming soon.

As Ole closed the publication Bertram Barnastian entered the discussion: "I'm beginning to see this elusive thing called communications in a truer light, especially what an employee publication can accomplish in selling management to employees."

Ole nodded. "And now, Ed," he said, again turning to the Zenith superintendent, "Any further questions?"

"Yes," replied Ed. "Something Batt remarked about worker magazines at our last meeting has got me wondering similarly about surveys. As I recall it, he said, 'First you want us to spend too much publishing an employee magazine, then you want us to spend still more to find out if the magazine is any good.'

"Now, I'm not trying to be funny. I'm serious. I'd like to know how you can really judge whether an attitude survey is doing its job—how you can know what its answers mean."

With delight, Batt boomed, "Atta boy, Ed! Blow 'em out of the water!"

There were laughs, then Ed continued, "Here's what I'm getting at: Suppose your study indicates 50% of your people think their pay's too low—that is, in comparison with what workers are making at similar plants in the local area. Well, is that 50% figure bad? Or is it good? Or just average? Tell me how you can know what it means."

"As I mentioned before," Ole responded, "a number of universities have run numerous attitude surveys. So have many consultants specializing in this type service.

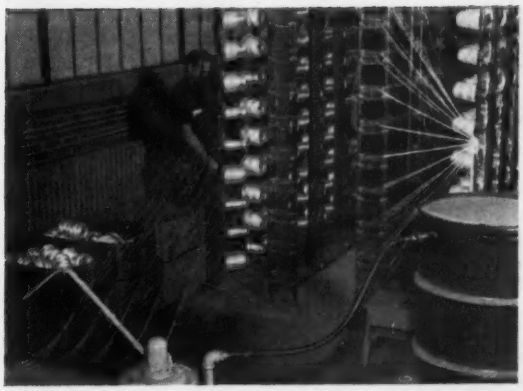
"The records are becoming both extensive and revealing, so that you can compare the results of a questionnaire returned from your employees with the average results from many other companies in your type of business.

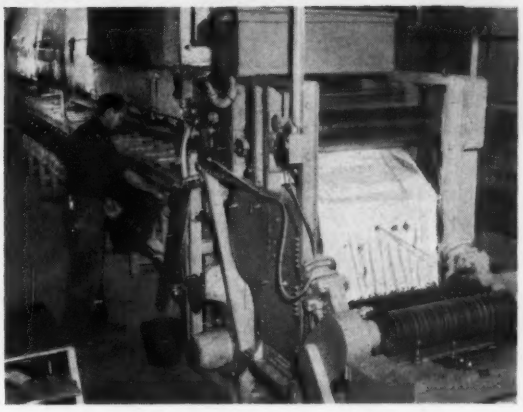
"This makes it possible to evaluate your workers' thoughts—on chances of growth and advancement with your company, on job security, on degree of confidence in the management, on how competent they consider first-line management, and on how they rate your working conditions, pay, benefits, etc.—with the concepts that similar employees in other companies in your field have of the same factors in their companies. Thus, you get a good yardstick."

"Thanks, Ole," Ed said sincerely. "You've really wrapped up this subject of attitude surveys."

"'Bout time, too!" Batt grumbled, yanking his watch from his pocket. "And next meeting can we get onto something else—maybe something like how to *make* money instead of spend it?

How V-Belts with the Green Seal save you money





Moneysaving performance is built into every Goodyear V-Belt in exclusive manufacturing processes like those illustrated above. Synthetic fiber cords are impregnated repeatedly with special rubber latex compounds. When treated at a precise tension and temperature for a precise time (the exclusive 3-T process), the cords are stabilized at the point of greatest strength before being built into the load-carrying section of Goodyear V-Belts.

They're dimensionally stable – Exclusive 3-T Cords or unsurpassed steel cables muscle belts that don't shrink or stretch in storage. So matched sets *stay* matched. Down time is cut to a new low.

They're precisely measured – The length you need is the length you get. Mismatching failures are minimized.

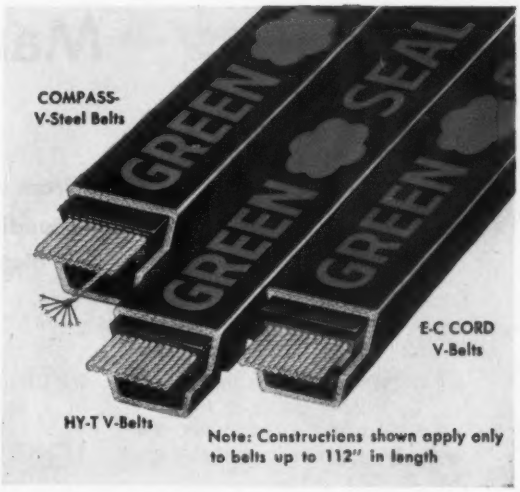
They're high in modulus, low in stretch – Power loss through "creep" is virtually eliminated. Take-ups are few and far between.

They're friction-balanced, non-dusting – Their covers don't grab or stick in the grooves. They run smoothly and cleanly.

They're mildew-inhibited – They're safely stored and operated in high moisture. Stand-by drives always ready when needed.

—AND IT ALL ADDS UP TO

—Maximum trouble-free horsepower hours at minimum cost. It's reason aplenty that you should use only V-Belts with the Green Seal. See your Goodyear Distributor for details. Or write Goodyear, Industrial Products Division, Lincoln 2, Nebraska, or Akron 16, Ohio.



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'Flagging' Shoppers Builds Sales

"MAKE IT EASIER for customer to find your product and she'll favor your package against a competitor"—that's the motto behind Chun King's special in-store displays. Above: Bamboo canopy, with attractive Chinese lanterns, tells Mrs. Housewife where CK's canned foods are located. Right: Steel-framed unit in freezer box keeps CK's frozen foods neatly arranged.

Marketing Savvy Parlays

Rocketing from scratch to a $17 million gross in only 10 years, Chun King now speedily orbits new top-appeal items . . . Convenience packages, retail displays spark faster turnover, give salesmen incentive

STANDING PAT on product lines can be risky—considering today's accelerated market competition coupled with the consumer's insatiable appetite for new items.

So alert manufacturers are ever thrusting out into new fields with expanded product lines.

Typical of this trend is fast-moving Chun King Sales, Duluth, which in a mere 10 yr. has parlayed a $2,500 investment into a better than $17,000,000 annual gross volume.

This company's growth was triggered by top-quality convenience-type Chinese-American foods (firm claims a dominant share of the U.S.'s $30-million Oriental-foods market). And now CK is pressing on with this three-pronged offensive—

1—New products that stress top quality and convenience.

2—New packaging plus practical displays for building more effective in-store merchandising.

3—Special intramural competition among salesmen to add new impetus to their performances.

CK has been launching its new products at a truly striking clip—seven new ones just in the past 6 months—bringing the firm's total

THAYER C. TAYLOR
Associate Editor, "Food Engineering"

RARE MOMENT in the life of CK President Paulucci finds him seated at desk. Usually he is either out in the fields checking crop conditions, in the plant making sure that processing is up to par, in retail stores querying shoppers, or flying to chain store headquarters and brokerage offices in scattered cities to line up promotions.

Quality Into Success

line to 35 canned and frozen items. Several take this Oriental-foods processor into new fields, as will be noted in this list:

Instant wild rice, soya sauce, brown sauce, frozen fruit rolls (in apple, cherry, and pineapple flavors), frozen sweet and sour pork, four styles of spaghetti with sauce, and "Mix'Ins" (institutional pack of Chinese vegetables that serve as a ready base for any chow mein or chop suey dish).

A casual look at this list suggests that CK is using the shotgun approach to new products. But not so—for behind each entry there's shrewd precision-firing at specific marketing objectives.

Take wild rice, for instance. Jeno F. Paulucci, CK's quality-conscious president, senses that streamlined merchandising can build a mass market for this gourmet-priced item (which retails for $2-$2.50 per 1-lb. box). And he hopes to get a big jump on the competition with a product that's designed to sell for less than $1 per 10-oz. can.

Then there's "spaghetti Italiano"—the company's opening foray into the booming Italian foods field (which reportedly siphons off $75-million a year). A carefully precisioned market-by-market introduction is now being carried out to give CK a beachhead. This will later be expanded with several new products.

Begins in Lab

R & D work on wild rice began more than 19 months ago when several hundred pounds of raw product were bought at auction from the Chippewa Indians, who harvest it in Minnesota's lake country. Batch after batch was tested in the laboratory as the company sought a product whose quality would match rigorous company standards.

While lab tests went on, in-the-field surveys were carried out by the J. Walter Thompson ad agency to develop facts on market conditions and buying habits (for use in future merchandising), also to check consumer images of wild rice (for tips on package design). Findings indicated that consumers: (1) Wanted a convenience product at less money, and (2) they associated the rice item with Indians and lakes.

The first condition was met by development of a precooked product, for which CK projected a more economical price (as will be detailed in a moment). But the second one posed a special problem, for Chun King brand was synonymous with Oriental foods.

Various Indian names were drafted and homemakers were polled. "Hiawatha" was an obvious choice, but previous limited use by another outfit ruled it out. "Minnehaha" seemed popular, but company personnel laughingly rejected it.

Finally, "Nokomis" was selected. Taken from Longfellow's poem *Hiawatha*, which had a Minnesota setting, this name bears strong Indian significance, also has simple brevity in its favor.

Working with the data on consumer impressions, Designer Ben Larsen created a simple layout marked by an Indian figurehead against a sky-blue-water theme. Purpose of the label, Larsen explains, is to capture the recognizable elements that suggest the romance of wild rice without weakening the product's quality connotation.

The Rains Came

But all of the preliminary groundwork threatened to be washed out when, at the start of last year's harvest, heavy rains flooded the rice beds, knocking out 60% of the crop.

With normally high prices pushed even higher, the company debated holding back the product for another year.

But Paulucci, who doesn't hesitate to look for solutions outside the rule book, decided that the program shouldn't be delayed by the short crop if the other factors—such as market potential, lack of low-priced competition, and the product's convenience angle—remained positive.

One change forced on CK by

IN-HOME CONVENIENCE is stressed by Chinese food "Divider-Pak" that tape-binds individual cans of meat and sauce. A hit with consumers, twin-unit is now being used to introduce new Italian-style line. Flavor retention is enhanced by packing ingredients in separate cans.

the rains was an upward revision of the retail selling price from a planned 89¢ to 99¢. Despite this, Paulucci is still determined to get this price down to 50¢ within the next five years. He hopes to do this by—

► **Increasing production,** thus lowering crop prices. He's already purchased 1,000 acres of Minnesota marshland, which he'll seed by airplane. And he's dickering with Canada for another 207,000 acres.

► **Modernizing harvesting methods.** Present hand-threshing way of gathering the rice is wasteful, lets 85% of the grains fall back into the water.

With only a limited supply of the rice to last through the next harvest, CK is introducing its product without advertising support. The firm hopes that the lower price and precooked feature will generate enough impulse sales to carry the project until larger supplies make a merchandising drive more feasible.

In contrast, CK's door-opener into Italian foods is spearheaded by a careful market buildup. Following rigorous consumer sampling in Duluth (test base for all new CK products), the company blocked out five special presentations for area-by-area use before gearing for national distribution.

Thus, the salesman first made a "confidential" survey of brokers, wholesalers, and retailers in each area. Then, armed with Italy-made merchandise (from typewriters to sewing machines) for dealer premiums, they distributed spaghetti samples among key retailers for testing in the homes.

It's to be noted that Paulucci goes in strong for taste tests, convinced that top quality of the products will do an effective selling job.

The campaign got off to a flying start in the first test area (Portland, Ore.). Sales topped the target level by 30%.

CK has since moved the spaghetti into Detroit, has Syracuse lined up as the next move. Two additional cities will be selected later on.

Dual-Pack Helps

The company's "Divider-Pak" feature, which bands two cans together, is being used to spur sales of the spaghetti product. Here, a can of uncooked spaghetti is taped to a can containing one of four sauces (meat balls, mushroom, meat, and marinara).

Paulucci reasons that keeping spaghetti and sauce separate plays up the flavor quality of each ingredient. Similarly, putting sauce in a separate can permits the housewife to use as much or as little as she likes. And, offering the choice of four sauces broadens product appeal in a wider range of potential users.

Diversification of product lines gives CK more room for its concept of intramural competition among the salesmen.

Rather than have a salesman carry all products, the company employs a separate crew for each of the main lines (canned and frozen packs, institutional, and Italian foods), with all the crews competing for orders. In time, CK hopes to have separate crews for canned and frozen lines.

Jim Lee, vice-president, sales, cites auto manufacturers as an example where divisional rivalry helps build overall sales.

"Our marketing philosophy embraces separate and distinct selling organizations to develop each of our brand lines. And our policy is to give the salesman a competitive situation, especially one within his own organization, and then watch him go all-out to excel."

Lee concedes that such a system can have its drawbacks. Larger ad budgets, higher distribution costs, and more complex organization structure are some.

But he points to the company's domination of the Oriental foods market as proof that the benefits outweigh the disadvantages. He sums up: "The easier route to a market is not necessarily the better one."

Used by the salesmen to especially good advantage are the in-store "Menu Magic Bazaar" display units. These bazaars group 21 products together effectively in minimum shelf space for mass display effect.

Hep to Retailer Wants

The canned-foods unit masses 17 CK items in only 9 ft of lineal shelf space.

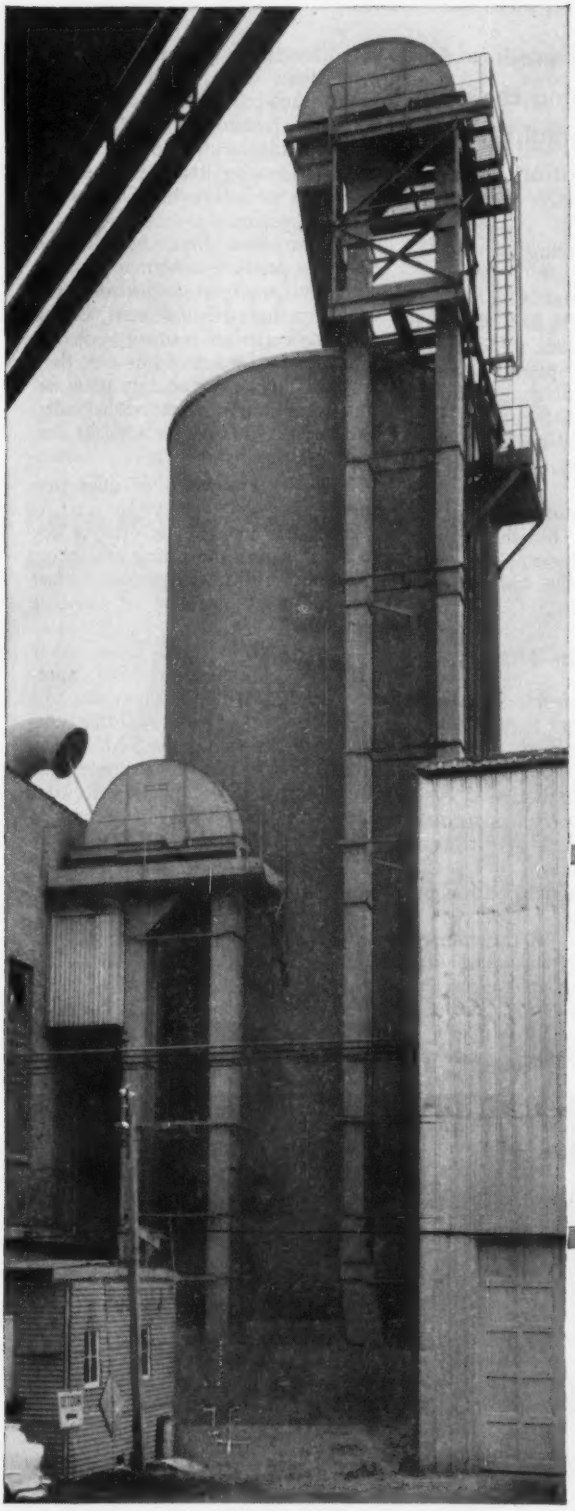
The frozen-food unit occupies less than a linear foot (11 in.) and can be expanded to the width of the freezer cabinet. Structural parts extend upward, allowing for precise placement of CK packages.

The bazaars dramatize one of Paulucci's solutions to a prime supermarket merchandising problem: Fewer facings in display area. Rather than try for extra space displays, CK relies on good packaging (such as the Divider-Pak), top quality convenience foods, and supporting promotions to move merchandise.

"Today, the food manufacturer must recognize the dominant role of the supermarket," Paulucci stresses. "He has to adjust his thinking to the realistic needs and limitations faced by the supermarket operator.

"New products need some shelf exposure. But shelves aren't made of expandable rubber. It's up to the manufacturer to look at his package objectively: Does this item deserve to be on the shelf—that is, will it move and give a reasonable profit? If the answer isn't yes, the marketing chain breaks down." —*End*

Why alignment is built into LINK-BELT bucket elevators *at the factory... not in the field*

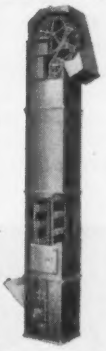


Link-Belt makes and integrates all components to speed assembly

EVER buy a "bargain" bucket elevator—then run into unreasonable installation costs? If so, you'll appreciate the ease with which Link-Belt bucket elevators are assembled. All components are carefully manufactured, assuring ready alignment. And because *Link-Belt makes them all,* they're integrated to match perfectly, operate smoothly.

At your request, Link-Belt will also accept erection responsibility. Particularly important if you're planning a new plant, this service—backed by Link-Belt's unequalled background in bucket elevator engineering—can contribute greatly to assuring over-all efficiency of your system. A Link-Belt representative awaits your call for a consultation.

- **HEAD SECTION COMPONENTS** — bearings, head shaft and sprocket—are chosen from Link-Belt's complete line on the basis of material to be handled and capacity requirements. Chains suitable for all service conditions are available.
- **INTERMEDIATE CASING SECTIONS** are fabricated for convenient assembly and assurance of accurate alignment. Casings are self-supporting. Occasional lateral tie-ins may be required where unusually great heights are involved.
- **BOOT COMPONENTS** incorporate bearings suitable for adjusting elevator chain to proper tension. Large access door makes routine inspection and adjustments quick and easy.
- **BUCKETS** — all types and sizes suitable for handling all kinds of materials are available from stock.



Designed for maximum elevating efficiency...

POSITIVE DISCHARGE elevators handle light, friable or sluggish materials and those having a tendency to stick to buckets.

INTERNAL DISCHARGE bucket elevators handle chips, pellets, nuts, seeds, etc. gently and at high capacity. Double head shafts operate in fixed bearings.

LINK-BELT

BUCKET ELEVATORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World. 14.805

For more data, circle this page number on card at back →

How *Weekly* Sales Analysis

Data-computer program does it—pinpointing product and salesman performance. Weak links in marketing chain uncovered before they harm profits . . . And rental arrangement spares Stahl-Meyer purchase and installation expense

MARKETING EFFICIENCY in the fast-moving food industry is critically influenced by how swiftly policy planners get the facts they need.

And because timing is so important, high-speed data processing computers bid fair to become necessary marketing tools.

Many companies know where these electronic "brains" can help in their own operations, but shy away from the million-dollar price tags such equipment carries. Others feel low utilization wouldn't justify the cost.

Stahl-Meyer, New York City, a regional meat packer with strong distribution, faced such a predicament last summer when it planned a sales analysis program designed to give management a weekly 'photo-flash' of salesman and product performance. The solution: A rental agreement with Service Bureau Corp., IBM subsidiary which handles electronic data processing at job or hourly rates.

EDWARD W. WILSON and THAYER C. TAYLOR
Respectively, General Auditor, Stahl-Meyer Co., New York City, and Associate Editor, "Food Engineering"

Under the agreement, S-M gives all the necessary data to SBC and is billed only for the time a Model 650 computer actually spends digesting the figures and coming up with the facts the meat company needs. Here, rental comes to $80 an hour. SBC rates vary according to the type of job required.

Cost of the sales analysis program is partially offset by the smaller clerical staff S-M now employs as the result of turning the bulk of data computation over to SBC.

Sped Through in 3 Days

Biggest gain, however, is the availability of important data in three days time, compared to the weeks and months previously required for compiling sales information.

Here are four ways management benefits from the weekly fast-facts on what is happening:

1. Complete product performance breakdown.

Extensive figures on the tonnage sold of each of the company's 250 meat items show the relative turnover of each product. Thus placed in a better position to spot selling trends, management can concentrate on faster moving items, cut back on slow movers before they become a drain on profits.

At the same time, overall rundown on product movement enables management to put production planning on a more efficient basis, as well as exercise stricter control on inventories. Being on top of trends as they develop, management can plan future production more realistically, and reduce overstocks without impairing customer service.

2. Better evaluation of sales personnel.

Salesman efficiency is often a key to a company's marketing efficiency. Maximum output per salesman must always be an objective of low-cost marketing.

Reports from SBC show what each S-M salesman is doing, spotlight where a weak salesman may not be turning in a profit-building performance. In such cases, S-M sends a troubleshooter out on the route with the salesman to find out why his sales are lagging, how they can be pushed up.

3. Improved basis for sales planning.

Sales forecasts must be based in large part on what is happening cur-

DATA CARDS are punched out on key punch (left) by girl who reads from salesman's invoices. Cards are then scanned on verifier (right), which flashes red light when incorrect figure shows up.

Alerts Management to Trends

rently. Otherwise, ambitious merchandising campaigns may be doomed from the start because they were based on unrealistic assumptions.

Time-span between compilation of necessary distribution data and conception of market planning is drastically shortened by computer programming. Where management previously had to wait weeks for the facts, it now has a complete profile of the market in a few days time, can make adjustments quickly to exploit favorable opportunities or reverse unfavorable developments.

4. A tighter control over the business.

This is especially important in the meat field, where the manufacturer must bid in the open market for raw material every day and must contend with prices that sometimes fluctuate widely.

If the reports show a certain item is not holding its own, the company avoids commiting itself to more supplies than it can handle profitably in the near future. Likewise, the profit obtained from each item (which is shown in the reports) indicates how much the company can afford to bid.

The fact that the computer is rented, and not owned outright, also brings S-M several advantages. Here are a few:

1. No long and expensive survey is necessary to find out what management needs to know. SBC works out program details geared to the customer's objectives.

2. Purchase cost ($1 million, and up) and installation expense (ranging from $100,000 to $500,000) are eliminated.

3. No waiting for necessary equipment (which can take from one to two years).

4. Company is spared the time and expense of searching for qualified personnel, or training staff people, necessary to run the intricate computers.

5. Low utilization factor is by-

Here's How S-M Keeps on Top of Trends

Division	Product (Code)	Weight Sold (lb)	Obtained ($)	Ave. Price ($/cwt.)	Production Cost ($/cwt.)	Gross Profit ($/cwt.)	Gross Profit ($)
14	1001	5,000	4,500	90	80	10	500

QUICK PICTURE of just how each Stahl-Meyer division and product made out in previous week is provided by this type sales analysis (fictitious figures for illustration). Amount on extreme right—total gross profit—is one always watched most carefully by management, for it shows whether an item is building profits. Information as shown here is provided for each sales division and each product, enabling management to spot trends as they develop.

Salesman	Product (Code)	Weight Sold (lb.)	Cumulative Weight Sold (for year)
23	1001	250	8,000

SALESMAN PRODUCTIVITY—an important key to marketing efficiency—is disclosed by this sales analysis report (again fictitious figures). Last column on right can be checked against quota company sets up at start of year. To make analysis even more valuable, company is studying possibility of having quota figure included in statement received every week from SBC, the data processing firm.

STREAM DROP SPRAY OR FOAM

PRECISION VALVES TOP THEM ALL!

If your product is liquid or viscous, Precision has the know-how and experience to help you package it in a pressurized container that will dispense it conveniently in a stream, a drop, a spray or foam. The sales record of pressurized products prove that *your* product might well make use of this new and profitable "package." Precision engineers will be happy to contribute their knowledge to help you ... there's no obligation, of course.

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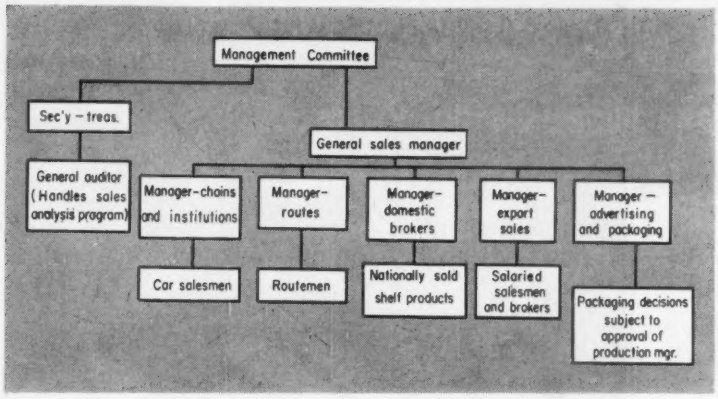


S-M's Marketing Setup

Holding firm's marketing reins is the general sales manager, who reports directly to management committee, company's top policy group. Under GSM are five managers. Although company is primarily a regional packer selling in Northeast and Middle Atlantic states, it markets a few shelf items on a national scale and also exports. Packaging is primarily responsibility of advertising manager. However, he works with production manager on redesigned labels and new packages.

passed. If the installation was privately owned, its high cost would remain constant whether or not the equipment was used.

6. Costs are pinpointed for each programming objective. If management wants additional information, the job rate will show how much it will cost to get the required data. Decision can then be made as to whether the additional cost is justified by the information to be gained.

What S-M Wanted to Know

When Stahl-Meyer decided to go ahead with the sales analysis program, it wanted to find out: (1) How much of each item was sold, (2) who was doing the selling, and (3) which items were building profits.

Like most meat outfits, S-M sells its products two ways:

First, there are 21 car salesmen who call on the larger independents and chain stores and who do nothing but sell. These men follow predetermined routes. Deliveries to the stores they service are made by assigned truck drivers.

Second, there are 37 other route men who load their trucks with what they think they will sell that day and peddle the merchandise wherever they can. Billed the list price of each item by the company, these men concentrate on delicatessens, "mom 'n pop" stores, and outlets whose small volume could not be handled profitably by the car salesmen.

Each Monday, S-M's clerical staff processes the invoices turned in by all the route men and car salesmen. Data are punched out on IBM cards with a Model 024 key punch and confirmed on a Model 056 verifier, which flashes a red warning light when an "unjustified" figure appears.

That night, cards are picked up by SBC and run through a computer. Then, on Tuesday a rough proof of the sales anaylsis is delivered to S-M for any readjustments that may be necessary—such as for invoices received after the first deck of cards was run off, error cards, missed cards, or duplicate cards.

Wednesday, the corrected proof is picked up by SBC. The full deck of punched cards (about 12,000) is run through a 650 computer and the final report is delivered to the meat company Thursday morning.

This report, made up of three separate analyses, is geared to the specific objectives set up by S-M.

The first analysis shows (1) what each salesman sold the previous week, (2) the total pound weight of each product type sold, and (3) the salesman's cumulative total for the year for each product.

A second analysis, giving a detailed breakdown for each of the company's 13 sales divisions, includes data on (1) each product type, (2) total weight sold, (3) dollar revenue obtained, (4) average price per pound, (5) manufacturer's cost for each item, and (6) gross profit for each item.

A third analysis, devoted only to large volume customers such as food store chains and concessionaires, lists the total weight of each product type sold and the gross profit of each item. Purpose of this special analysis is to show whether the customer, because of his larger than normal volume and the pressure he can bring to bear on prices, is a profitable one for the company.

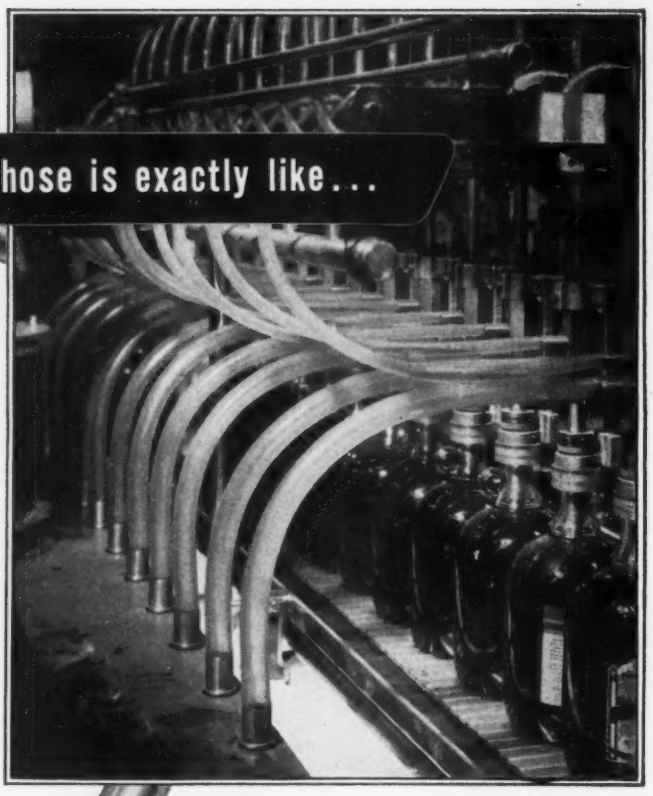
You may have noticed that volume weight of each product sold gets an important play in the data processing. This is because actual tonnage sold, rather than sales dollars, is an effective measurement of whether a certain product is producing a profit.

Thursday afternoon, individual copies of the reports are given to members of the management committee—the president, executive vice-president for manufacturing, general sales manager, secretary-treasurer, and the president of the company's export division. Officials have two days (plus the weekend) in which to study the reports before their regular Monday meeting.

When the committee meets, it has valuable information which it previously lacked—a complete breakdown of sales and product data. Furthermore, it doesn't have to wrestle with a mass of data—because the sales analysis consolidates all the necessary information into three brief reports. —*End*

"The auditors said I needed equipment that'd give maximum utility with fastest amortization—which this does, considering how I use it every week-end to go fishing."

No other food and beverage hose is exactly like...



TYGON B44-3

Where else could you find a piping medium for liquid foods and beverages that combines all these features:–

Chemically inert—non-toxic, completely resistant to all food acids and commercial cleaning agents. Tygon B44-3 tubing "pipes" the most flavor sensitive foods and beverages with never a trace of flavor or odor taint.

Flexibility—permits installation in long continuous runs without joints or couplings. Adapts to any layout. The polished bore plus the absence of sharp turns allows rapid flow rates without clogging.

Glass-like clarity—permits visual inspection of flow at any point.

Easy cleaning—Tygon lines may be disassembled, cleaned or steam flushed and reassembled in minutes.

Fifty-five bore sizes—1/16" i.d. through 3" i.d. to accommodate virtually any plant requirement. Simple clamp fittings make for fast easy coupling or uncoupling. No other tubing is exactly like Tygon B44-3. The complete story—fully detailed, graphically illustrated, is yours for the asking.

Write today for your copy of Bulletin T-97, Tygon Flexible Plastic Tubing.

Plastics and Synthetics Division

U. S. STONEWARE
AKRON 9, OHIO

J85E

CASE HISTORY OF MONTH

From files of *National Consumer Panel Division* of Market Research Corp. of America. Material is factually correct. Identities of product and companies have been masked to insure anonymity.—The Editors

Targeting the Trouble Spot

Management's problem

WE ARE in head-on competition with a major competitor for No. 1 position in our merchandise category. We have broader distribution—on a national basis, 49% of food stores stock our brand vs. 32% for the competitor. Our price is competitive. But we are making unsatisfactory sales progress. Something obviously has to be done about it.

What Would You Do?

Management's decision

We ordered a study to determine how we compare with competition in terms of: 1. Number of families buying. 2. Repeat purchase and brand switching patterns. 3. Customer gain and loss summaries ("source" of new, disposition of lost, buyers). 4. Brand loyalty comparisons. 5. Purchase frequency.

Result of action

The desired information was obtained from purchase diaries of families in the National Consumer Panel. We learned that we have more customers *in* a year, but our competitor has more customers *each quarter* than we have.

This is explained by three reasons: 1. Competitor has more repeat buyers each quarter (people who bought brand again in following quarter). 2. He loses fewer buyers to other brands each quarter. 3. He has more new buyers each quarter in his major markets (people who had not bought brand in preceding quarter).

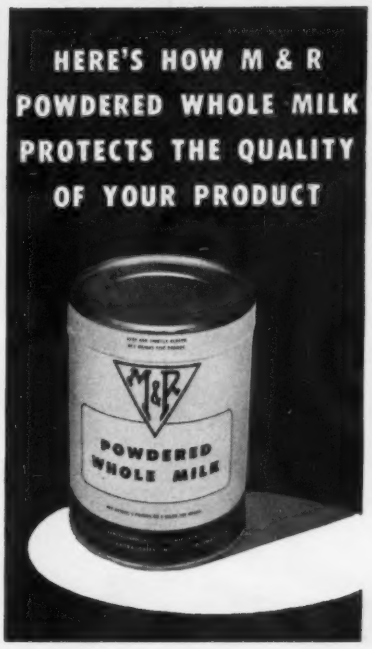
The competitor has a lower loss ratio (of "buyers switching" to "repeat buyers"). Thus we are more dependent on new buyers. Our customers buy less frequently and in smaller quantities. Finally, the competitor enjoys greater brand loyalty.

These findings enabled management to pinpoint the trouble spots. The difficulty couldn't be traced to distribution or price. Nor could advertising and promotion be at fault, because "new" customers were being attracted in good numbers.

Therefore, the higher brand switching rate, lower repeat purchase rate, and the resulting high customer turnover pointed directly toward product and/or package acceptance considerations—or possibly to unfavorable in-store shelf display conditions.

As a result, our management carefully examined consumer acceptance of product and package and reviewed the brand's situation at the point of sale. This led us to make basic product improvements and package changes. Subsequent sales recovery bore out the correctness of this decision.

For more information, write to Case-History Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y. Your inquiry will be directed to source of case-history item.



M & R Powdered Whole Milk is gas-packed in convenient, completely sanitary, easy to handle 5-lb. tins. It offers the quality food processor these three important advantages:

- **Consistently high quality product, insured by M & R's rigid quality control procedures, insures consistently high quality results.**
- **M & R Powdered Whole Milk, in unopened tins, can be stored indefinitely at room temperature with absolutely no deterioration.**
- **When you open a tin, you use it all—when you buy in bulk containers you inevitably have an open container sitting around inviting contamination or infestation.**

Of course, any powdered whole milk eliminates the refrigerated storage nuisance involved in using fluid milk, but M & R's 5-lb. tins are the only *complete* answer to the storage and handling problem. Any worker in your plant can easily handle the 5-lb. tin . . . it takes a muscle man to wrestle with heavy bulk containers.

For complete details on M & R Powdered Whole Milk in convenient, completely sanitary, easy to handle 5-lb. tins, just fill out and mail the coupon below. Do it today.

M & R Dietetic Laboratories, Inc.
640 Cleveland Avenue, Columbus 16, Ohio

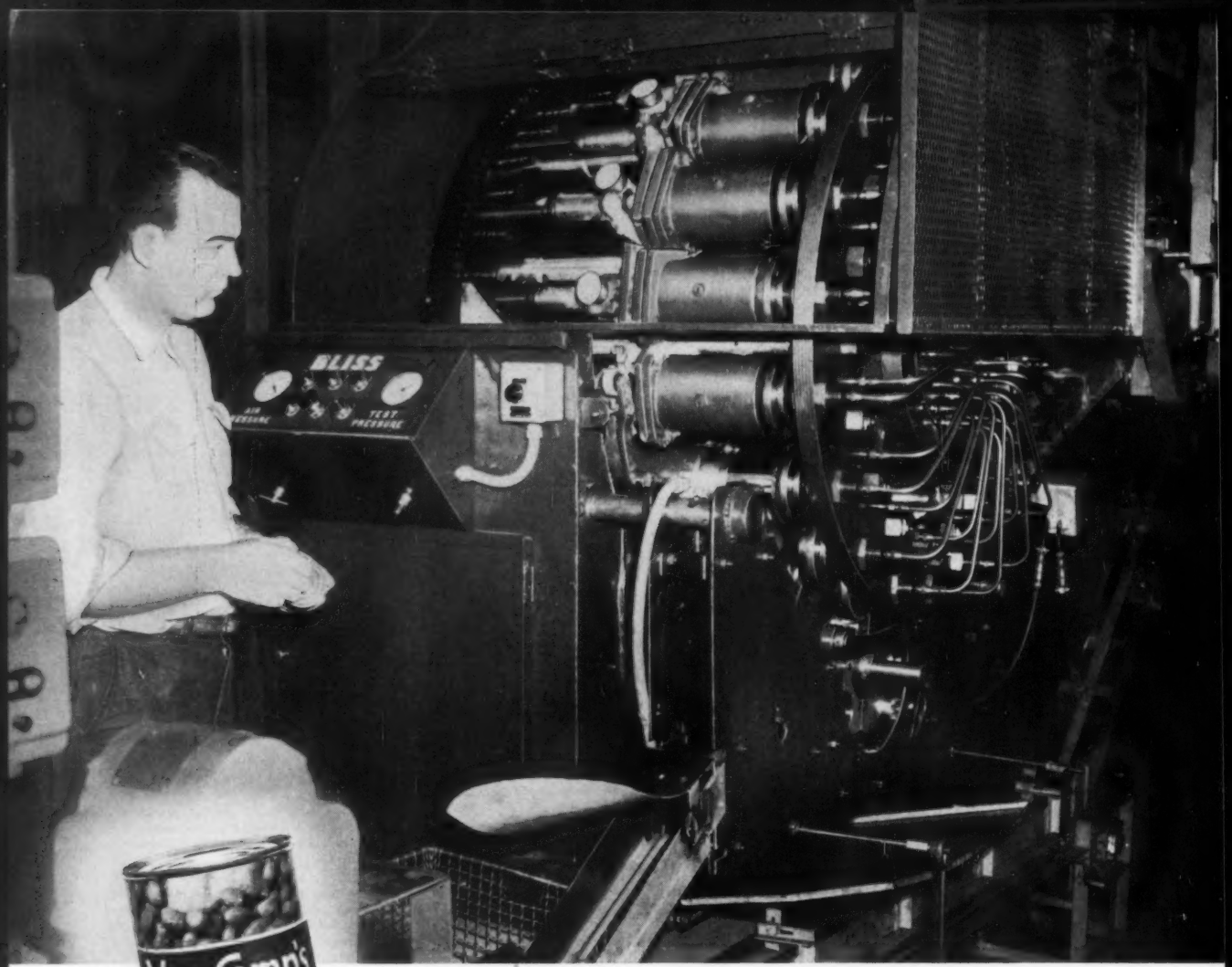
Please send me details on how M & R Powdered Whole Milk in 5-lb. tins can help us protect quality, eliminate waste and spoilage and simplify handling and storage problems.

Name_____ Title_____

Company_____

Street_____

City_____ State_____



PORK and BEANS...

with a touch of BLISS

This can tester detects invisible "leaks"... is typical of the variety of high-efficiency Bliss equipment that Stokely-Van Camp uses to make its own cans.

If *you* make your own cans... or are thinking of it, check with Bliss. Chances are that a completely Bliss-built and equipped "turn-key" plant can take the headaches out of the job for you. But whether it's a complete plant you need, a battery of machines or a single can tester, see your Bliss representative first.

BLISS
SINCE 1857

E. W. BLISS COMPANY · Canton, Ohio

BLISS is more than a name... it's a guarantee

PRESSES • ROLLING MILLS • MILL ROLLS • DIE SETS • CAN MACHINERY • CONTRACT MFG.

Upgrading the Salesmen

With today's rugged competition making it harder to get products onto store shelves, food firms are giving more special recognition to the man on the firing line who does a better-than-usual job. Pillsbury Mills has set up a Golden Ambassadors club–an "exclusive" organization of the company's top sales producers.

To qualify, a salesman must: (1) offer complete distribution of products–and sizes–in key stores, (2) keep adequate on-hand inventories, (3) competitively price all distributed items, (4) maintain top trade relations with store manager and personnel, (5) see to it that Pillsbury items dominate shelf fronts, and (6) be sure Pillsbury gets good space in floor displays.

Restaurant Side-Sales Cutting In

Look for more restaurants to boost their bids for increased sales through distributing their products in retail food stores and institutional outlets–which spells stiffer competition for grocery manufacturers.

Stouffer, for example, reports its 19.7% increase in earnings for first half of new fiscal year was due to its institutional feeding division, which racked up 148% increase in fees, and its retail frozen foods line, which hiked sales 38%.

And the John R. Thompson restaurant chain credits a 60% sales gain by its frozen food division as principal factor in company's 24% boost in profits last year.

Know Your Target

The character of today's food store shopper reflects changed living habits, and so embraces more than the Mrs. Housewife of yesterday. A few tips on how you can shape your products, packages, and merchandising to today's different family food buyer are included in a recent Super Market Institute survey.

1. Children influence shopping decisions regarding candy, cookies, cereals, juices, bread, peanut butter, jams, and jellies. If your product appeals to them, be sure it's on a lower shelf within their reach. 2. Just under 11% of all households are single-person units. Smaller packages are especially attractive to them. 3. From 47 to 60% of men shopping without their wives buy more than they were supposed to, are more eager to try new products. Special "for men only" promotions may get new items off to stronger starts.

Helping the Retailer

Modern self-service supermarkets, with their thousands of products, ease the work of the shopper. But they complicate the job of the retailer, so to help him know what items are building profits, National Biscuit has launched a new merchandising service (based on a survey of supermarket performance) that shows grocers: (1) What cookie and cracker products and brands produce the greatest profits, (2) which slow movers cut into profits and should be discontinued, and (3) how to determine the most profitable allocation of shelf space.

Two years were spent in developing the required data. The survey measured some five miles of store shelving (in outlets doing $200 million of business a year) to find out the dollars and cents a grocer makes on each row and each brand of cookies and crackers.

Thus revealed were the key facts now employed to help the retailer plan his space allocations more scientifically. And resulting are stronger trade relations for the company.

New Push Behind Tea for Family

Tea sales through food stores have remained static for the past 2 years. To correct this situation, Tea Council of the USA has launched a $1,200,000 TV campaign, biggest ever on the brew. To run for twenty weeks, the effort involves an intensive schedule of TV spots in 18 leading markets.

The total 1957 budget was only $1,800,000, including $800,000 for the last quarter as part of the new drive.

Night time TV spots, 6 to 11 p.m., are being used to effectively reach the entire family audience–not adults only.

BRIEFS

Growing outdoor market for foods eaten away-from-home is indicated by FWS report that 34.2 million fishing and hunting licenses were sold in '57–a million more than in the preceding peak year.

Will merger trend extend to food brokers next? With fewer principals to represent, and fewer buyers to sell to, a New York City brokerage is trying to get several firms to combine field crews into one super selling force.

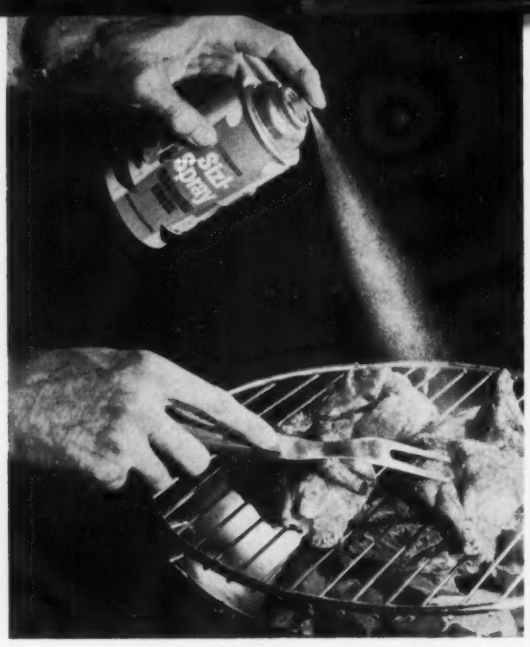
More business for restaurants is goal of new Kraft "sweepstakes" that offers diners chance at several luxury-ticket items. Hoping to expand its institutional volume, Kraft will provide tie-in displays.

Easier price-change marking (with "built-in" cello windows) highlights California Strawberry Advisory Board's new display kits.

Tapping "gourmet dish" uses of sausage can up the product's 12% share-of-meat dollar to 20%, according to Food Writer Ida Bailey Allen. She urges more publicity about sausage's place in "different, exciting, easy to make" dishes.

National Fish & Seafood Week promotions over 3 yr. have helped fisheries establish a Fall selling season. This year's dates: Oct. 6-12.

Three Aerosols: A foam for whip toppings . . .



. . . a spray, for barbecue sauce . . .

Pushbutton Foods:

Striking advances along the technological front bid fair to give pressurized packages a bigger role in the search for better easy-use containers. Here's a rundown on what's been achieved, what remains to be done

CONVENIENCE PACKAGING—your strongest in-store selling tool—is taking on new dimensions as the result of newly developed aerosol-type foods that streamline product dispensing in the home.

Significant improvements in gasses, cans, valves, and machinery are knocking down many of the technical roadblocks that slowed progress in the past. And stepped-up research is making a wide range of foods eligible for the pressure packs.

PRODUCTS: Long confined to dessert toppings (whipped cream and vegetable oil substitutes), aerosol packs late last year were joined by the first non-foamy foods—barbecue sauce (Heublein) and chocolate syrup (Sifers). Currently, Reddi-Wip is test-marketing a cheese spread (packed by Western Filling) in Los Angeles and Canada.

THAYER C. TAYLOR

Associate Editor, "Food Engineering"

This month, General Dynamic's Liquid Carbonic Division will enter the aerosol foods field with four 16-oz. flavored toppings—butterscotch, fudge, marshmallow, and chocolate. And the marketing plans of other companies call for early introduction of pressure-packed salad dressing, meat tenderizer, and liquid coffee concentrate. Using compressed nitrogen gas as the propellent, the coffee product is said to retain its aroma for six months at room temperature. Composed of 25% solids, a 5-oz. can of concentrate can give between 25 and 30 cups of reconstituted beverage, and possibly retail for around 70¢—which makes it competitive with soluble coffee.

Triggered by the technical advances, the list of potential pressure-packed foods has zoomed (one canner reports that 95% of the samples sent to his laboratory have been successfully loaded and dispensed). Considered feasible from a production standpoint (but not necessarily a marketing one) are: Worcestershire sauce, edible oils, fruit syrups, pancake batter, honey, fruit toppings, condiments, decorative cake toppings, beverage-base syrups of fruit or cola type, and even jams and jellies.

And when a method for dispensing highly viscous products is perfected, these items loom as possibles: Canapé pastes, mayonnaise, peanut butter, cake icings, and soft ice cream. Sweeteners and flavorings may get the nod, too, when drop-by-drop dispensing has been worked out.

Even staples such as mustard, catsup, and table syrup have been talked up as potentials. However, the outlook is less promising here, because, allowing for the additional costs inherent in pressure packs, it would be very difficult to have an aerosol product competitively priced vs. the conventional version.

Furthermore, part of the packaging appeal of a product such as catsup lies in its color. Hiding the

. . . a stream, for salad dressings.

Fad or Trend?

source of that appeal in a tin can wouldn't improve the item's sellability.

Future outlook is best for infrequently-used products that are in the specialty category—where use-convenience compensates for the higher price, and flavor retention over a long period is desired. One observer who leans to this view cites the experience of aerosol shaving creams, where purchase every three or four months flattens out the effect of the higher price.

Need Bigger Trigger

While specialties may set off a baby boom in aerosol foods, something more substantial will be needed for long-term growth. Says S. Jack Campbell, sales manager, Continental Filling: "Although the gimmick packages might represent nice volume, it's generally agreed that these products enjoy only a relatively short-term popularity. Packages that build long-term repeat sales will have to present the consumer or manufacturer with direct advantages. For example, how aerosol whip toppings save time and work, how barbecue sauce has convenience and ease of application."

PROPELLENTS: Heart of the pressure pack is its power plant—the gas that drives the food product out of the container. Long sought has been a gas which maintains a constant pressure throughout dispensing, leaves no product residue after it's been exhausted, and has no side effect on food flavor.

Recent introduction of compressed nitrogen gas, along with special actuator valves for dispensing, enabled fillers to set their sights beyond the foam-type products. Among the advantages of nitrogen, according to Aerosol Techniques, are low price (less than a cent per can), and dispensing of products from thin liquids up to thick pastes with viscosities up to 100,000 cps. in their original unaerated form.

Further, the gas holds a fairly uniform pressure (90 psig. at 70 deg. F) over long periods of time, is comparatively insoluble in liquid concentrates, and will not oxidize or hydrolyze (which may open the way for aluminum cans). AT also suggests that, with nitrogen as the propellent, future food products may be sterilized by autoclaving, since pressure rise is moderate.

Next significant breakthrough in propellents may bring a liquefied gas into the picture. Regular Freon propellents are not suitable for use with foods because of their taste. Also, with some foods, hydrolysis during storage could result in some formation of fluoride. Du Pont has now developed a new fluorocarbon (Freon-C318) that is free from both objections.

Du Pont hopes to complete the detailed long-term studies required by FDA later this year, but Frank W. Blodgett, sales development, reports that "our experience to date indicates that C318 should present no problems from a toxilogical standpoint."

Research work indicates that the propellent will probably work best with moderately viscous water-based products dispensed as aerated stable foams. Dessert topping, cake frosting, fruit flavoring (that can't stand exposure to light or air), and the like are "good possibilities," Blodgett says.

The Freon has an "ideal" vapor pressure of 25 psig. at 70F. Using C318 instead of compressed gas, Blodgett contends, the loader can put more food product into a can and still permit the consumer to get almost all of it—say 90-95%—out before the pressure falls. Exact percentage of discharge depends on the viscosity of the product and how much residue clings to the can, Blodgett says. Like other liquefied gas propellents, C318 maintains its original pressure throughout the use-life of the package, he adds.

Practically odorless and tasteless (important factors for bland foods), the Freon has an "extremely low rate of hydrolysis," according to Blodgett. This means that the gas will not likely promote can corrosion or spoil product flavor. Only slightly soluble in oil-based foods, the Freon's use with these type products may be economically feasible. Lab tests have showed no deterioration under rigorous storage conditions, even in the acid or alkaline systems found in some foods.

No price has been set for the gas. Published reports that it would sell for $1/lb. are discounted by a Du Pont spokesman. Price could reach this level if enough demand develops, he says, but the introductory stipend will be somewhere between that level and what it actually cost to make the gas in the pilot plant, he adds.

Semi-commercial quantities of C318 may be available later this year, pending FDA approval. At present, Du Pont is making limited pilot plant samples for use in qualified labs.

Filled as a liquid, part of the propellent evaporates and goes into the container's headspace. Some of the

gas also emulsifies with the products, so that even if the valve is opened by mistake there will still be gas pressure left behind to drive out the food product for dispensing.

CONTAINERS: Development work on improved cans for aerosol foods has been pushed hard by American Can, Continental Can, and Crown Cork & Seal. From their labs have come containers with extra side-seam strength to withstand internal gas pressure, "foolproof" units that permit dispensing in any position, special anti-corrosion linings that extend shelf life, and elimination of side-seam to permit attractive lithography on the full surface area of the can.

Product adhesion has been curbed by better can linings. Aerosol Techniques claims that a special lubricant it has developed, when applied to dip tube and container walls, minimizes friction and product cling. Lower product viscosities (successfully done with aerosol toothpastes) have also been suggested as a means of helping the consumer to get more product out of the can.

Both the single-piece top can and the 1-in. cup can are used for aerosol foods. Although it costs $5-$10 more per thousand, the cup type is more popular because its universal top accommodates a greater variety of valve types.

Bigger Units Favored

Trend among the dessert toppings has been to larger sizes—from 6-oz. to 12- and 16-oz. Sifers uses a 16-oz. unit, Heublein a 12-oz. one. When Lever Bros. brought out its "Lucky Whip" last fall, it test-marketed two container sizes to gage consumer response. The firm quickly dropped the smaller unit when consumers showed overwhelming preference for the larger 16-oz. size.

Although tin cans have had the field all to themselves up to now, there is increasing interest in aluminum cans. Victor Metal Products, which opened a new plant last month for the production of aluminum cans, says a complete automatic manufacturing line will make the containers 2% cheaper in price than their tin counterparts.

Added protection against tampering has been built into aerosol containers with specially designed caps. Lever Bros.' squiggly top screws down over grooves in the nozzle, and Reddi-Wip's plastic cap has to be broken off at the bottom before use.

VALVES: Easy dispensing of aerosol foods in a variety of forms—foam, spray, stream, or drops—has been helped by development of special discharge assemblies. Because food products vary in particle size, desired degree of aeration, and viscosity, considerable work is being done on valve orifices that will accommodate these differences.

To take one example, dispenser unit on Heublein's container has a tiny spinner in the valve expansion chamber that breaks up the product stream into a non-foamy spray pattern. On the other hand, successful pressure packaging of peanut butter —and other highly viscous products —has been slowed by the fact that openings on standard valves are unable to dispense the food in a desired form.

Food matter that remains on the nozzle after discharge poses a sanitation problem. Where food particles remain outside the spout after use, there is the danger of mold growth. (This will become extra critical if products that contain potential bacteria-forming ingredients, such as baby foods, are pressure packed.)

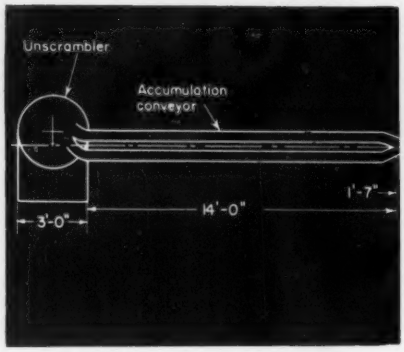
MACHINERY: Low filling speeds have hampered mass production of aerosol foods as well as added to extra costs.

Compared to the production speeds common in the canning industry (anywhere from 350/min. to 1,000/min.), the maximum 60/min. rate for aerosol loading is a costly affair. It's been said that increased filling speeds offer one of the best areas for cost reduction.

Development of high speed lines has been held up by the necessary shake-cycle (ranging from 10 to 18 sec.) during which cans are agitated to make the propellent gas integrate with the product. One firm hopes to slash this shake time with a tumbler-gasser that turns cans end-ever-end during gassing.

The possibility of lowering costs through faster runs may soon come if the ambitious plans of Mojonnier Associates bear fruit. The firm is working on a line that will handle 220-225 cans/min. (and eventually hopes to push this to 300/min.).

Line components include: Rotary turntable-type container unscrambler ($875), 16-head rotary-filler ($7,500) auxiliary air cleaner ($5,500) 12-head crimper ($5,750) with code attachment ($1,250), 16-head rotary gasser ($5,550), auxiliary 12-head purger ($5,800), automatic valve feed and container activator



applier (no price set yet), and water bath to detect leaky cans ($12,500). Total price, not including the valve feed, is $44,725. This compares favorably with line equipment now in use.

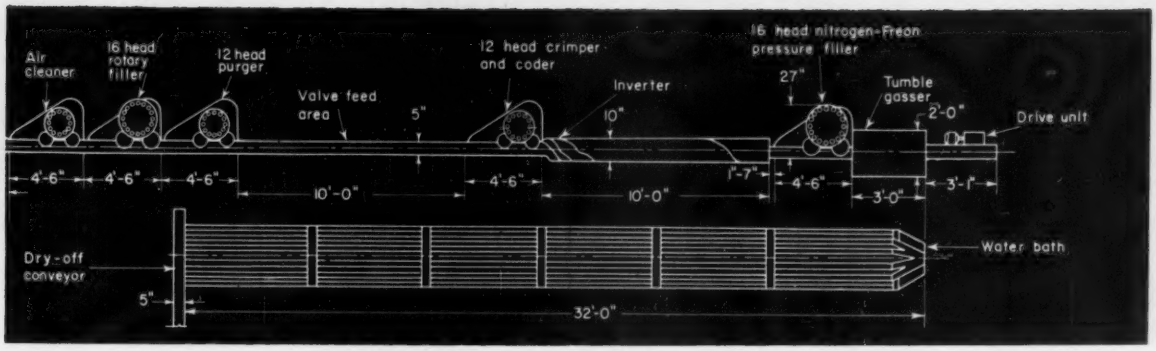
Indicative of the field's formative period, costs of installing an aerosol line cover a wide range—from $50,000 to as much as $100,000. One dessert topping maker estimates his 60/min. line—including filler, crimper for fastening valves to cans, and gasser-shaker—comes to $75,000. Adding conveyors, coders, and selector-hopper—for automatic operation—hikes the outlay another $25,000. (Refrigeration devices, vats, homogenizers, and other equipment that is standard in dairy plants are not included.)

COSTS: Because of its various components—container, valve, dip tube, and propellent—a pressure pack incurs additional costs as against the conventional one-piece can. Various guesstimates distribute the costs as follows: 12-oz. can, 4-5¢; valve and tube, 3-6¢; gas, 0.5¢. Total: 7.5¢ to 11.5¢. In addition, contract packaging adds another 4-5¢, thus bringing the total outlay to 11.5¢ to 16.5¢.

Naturally, as demand builds up, parts and line costs should come down. But the minimum 11.5¢ spread certainly indicates that any attempt to pressure pack such low-price staples as catsup in the near future will find rough going.

One source estimates that where an aerosol version costs up to 10¢ more than a conventional package, consumers may find the additional convenience worth it.

MERCHANDISING: Appearance of new brand names and products



HIGH-SPEED line developed by Mojonnier Associates will fill 220-225 cans per minute compared to 60/min. conventional assemblies. Slow loading rate in the past has kept operating costs high, but new mass-output machinery will help to make aerosol foods more competitively priced.

has fueled a stronger selling push behind aerosol foods.

Kraft is reported as readying several new items. Sifers will use Beatrice Foods to get national distribution for its chocolate syrup.

Package appeal and a strong television spot campaign feature Lever Bros.' campaign. Plastic guard cap for Lucky Whip has a swirl design which simulates dollop of topping, and four different can designs have been prepared for seasonal use.

Lever Bros.' TV spots plug hard at the low calorie theme. And viewers are reminded that the big 16-oz. can gives 10 more servings than "small . . . old-fashioned 6-oz. cans."

CONSUMER REACTION: Steadily increasing sales of the whip toppings reflect their customer popularity. But what the housewife will think of other aerosol foods is still undetermined. Some interesting light was recently thrown on this when Canco asked a panel of 18 testers to compare home-use of chocolate syrup in a pressure can and in a conventional can.

Seventeen of the testers preferred the pressure pack for ease in general use and storage—the one dissenter reported the pushbutton container did not always work. Thirteen panelists said they would buy the aerosol can despite its 10¢ higher price, while two objected to the price, two opined they use too much syrup to afford the pressure can, and one stated no preference.

Asked why they favored the aerosol can, testers replied: "Can get desired amount without having it drip after use" . . . "Easier to get required amount in less time" . . . "Not necessary to refrigerate for storage" . . . "Neatness of can, ease of storage and handling" . . . "Much easier, no mess, and easier to store" . . . "No worries about spilling" . . . "No worry about product getting moldy" (Sifers says shelf-life is one year) . . . "More economical in the end because there's no waste."

FUTURE OUTLOOK: While the above sentiments point to a favorable potential, estimates on probable '58 production vary widely. There is general feeling that output this year will climb to between 75 and 100 million units (vs. 60-70 million in '57).

These estimates call for some qualifications. For one thing, they were made before the high-powered Lever and Kraft brands entered the market—which may favor the higher figure. On the other hand, the year's first quarter has already passed and the newer aerosols which were expected to boost overall volume are still in the experimental stage, market-wise. They have not approached the distribution penetration which spells mass volume.

Furthermore, R & D work on potential aerosols is a long-time proposition, primarily because of the extensive storage tests that must be done to determine the product's shelf-life. Prior to marketing of the chocolate-syrup product, there was a year of preliminary work.

Another factor that remains cloudy is the probable effect of the vegetable oil substitutes brought out by Kraft and Lever Bros. These items could mean plus-business for the aerosol market or they could eat away at the established business of the whipped creams. This uncertainty is partly traced to the price difference. For example, Kraft's whipped dessert topping (6 fl. oz.) sells for 37¢, while Reddi-Wip's instant whipped cream (6 fl. oz.) retails for 55¢.

Also unresolved at present is the question of who will do the packing—whether it is best for a food manufacturer to set up a line in his own plant or turn the operation over to an experienced contract filler. Considering the high cost of machinery, many loaders have delayed installing lines pending more interest in aerosol foods by big-name manufacturers. For the same cost reasons, a food firm weighing entry into the field may want a contract loader to handle his product until he gets a better fix on potential sales.

Heublein and Sifers use contract fillers for their products, but the course taken by Kraft and Lever Bros. indicates that big-budget firms may prefer to do the filling in their own plants. (One consideration in their plans was the fact that much of the machinery already in their plants could be used for aerosol products.)

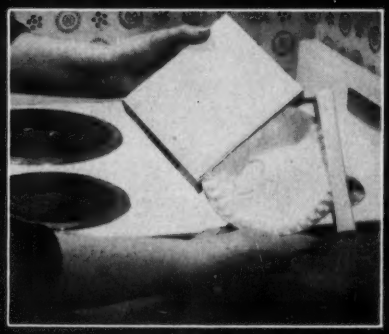
Lever Bros. says it decided to do its own filling because it wanted direct control over actual loading. Kraft at one time was reportedly interested in marketing a product put up by an outside aerosol firm, but backed off when it couldn't have a voice in product formulation or on loading conditions.

Most processors are said to feel that their quality control programs can best be carried out when filling is done in their own plants. Conversely, contract loaders argue that their greater experience in aerosol filling means that they can set up a line much more efficiently and economically. —*End.*

Quick Access Thermo-Stik Box

Pull the tab...

...peel the strip...



...end is off—and pie slips out

Fast-Openers Up Package Value

With product protection enhanced by strong closures, search is now on for ways to help housewife get at contents more easily . . . Latest improvements cited

NEW WAYS to make it easier for Milady to get at the product are becoming a packaging must. Reason: Extra-tight end seals have been perfected to the point where the housewife needs a wrestler's strength to open packages.

Developments on easy-open devices looks especially promising for board cartons and polyethylene overwraps.

A built-in tear strip for its Thermo-Stik carton will be introduced this month by Lord Baltimore Press, New York City.

The opening device, made at the manufacturing point, is a die-cut scored part way through the box from each surface side. Box fibers are thus so separated that when the housewife pulls back a hand tab the box end breaks off cleanly in a straight line.

Because the score does not go all the way through the board, the product is still protected against air and moisture entrance. Furthermore, wax coating used on the board fills the scoring crevice.

First user will be Gorton's of Gloucester. The seafood packer has also adopted a similar die-cut box made by Container Corp. of America, New York City.

An automatic packaging line will adapt the Thermo-Stik box to Gorton's unique process, where fish sticks are frozen in loose-pack prior to cartoning. The Lord Baltimore line will automatically unscramble the frozen sticks, place them in the carton, and seal the end-flaps. As a result, Gorton's hopes to cut labor costs by as much as one-third.

Firm will continue to use its CCA box on hand-pack runs of sticks.

Main problem connected with scored boxes is weakening of carton strength at the tear line—which becomes important when several units are stacked one on top of the other. To avoid this, other companies are experimenting with built-in paper tapes. Disadvantage here is that the tape produces surface bumps, which make printing difficult.

Quick-open devices have become desirable for use on polyethylene wrappers because of the firm's strength—a good property during shipping and handling, but one which proves bothersome in the kitchen when the housewife tries to open the package.

After considerable research, Bakelite has come up with three suggested easy-open methods for polyethylene overwraps. They are:

1. **Peelable seals**—which are obtained by supplying sufficient heat to the end folds or underfolds to provide a laminated seal. The seal is strong enough to withstand constant handling but soft enough to remain peelable.

2. **Perforated film**—which permits two types of easy-open packages. A dispenser-type opening can be made if the perforation lines are positioned on one face and partially down two sides of the package. Or an end tear-off unit can be achieved by having the lines run completely around the package.

3. **Tear tapes**—made by placing a secondary material on the polyethylene. Main obstacle to tear tapes for this poly, Bakelite points out, is the film's stretchability under tension, making it difficult to get a straight tear when the tape is pulled.

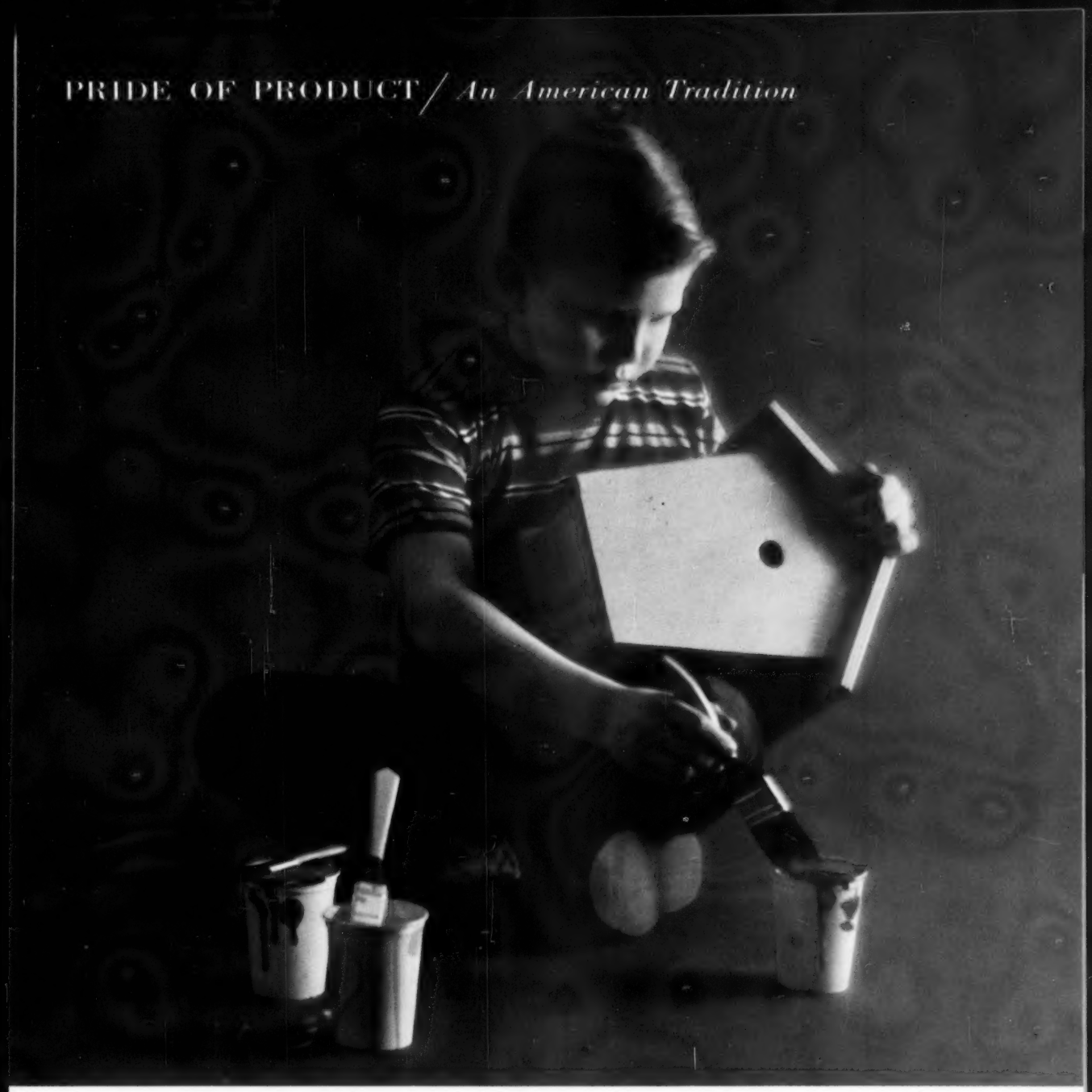
Five materials were tested by Bakelite for potential tear-tape use. They are: Pressure-sensitive tape, cellophane tape/thread (applied outside the package), polyethylene-coated 40-lb. kraft paper (inside or outside the package), cloth (but porosity must be considered), and polyethylene tape with glass filament (high seal temperature needed for good edge effect).

A sixth method, tried experimentally, involves extruding three parallel beads of polyethylene onto the film. Outer two beads prevent stretching of the film, while the middle one acts as the tear tape.

One of the first tear-strings for a polyethylene-paper-foil package is the one used for Carnation's hot cocoa mix. The zip pouch (made of 25-lb. pouch paper laminated with 7-lb. polyethylene to .00035-in. aluminum foil and coated on the foil side with 15-lb. poly) has a cotton tear-string laid down the center of the web.

Pull-type tears are being developed for other film packages. One Midwest concern is said to have perfected a pull-tape opening for sliced cheese and luncheon-meat packages. And a West Coast firm will shortly have a string opening for Mylar boil-in-the-bag pouches. —*End*

PRIDE OF PRODUCT / *An American Tradition*



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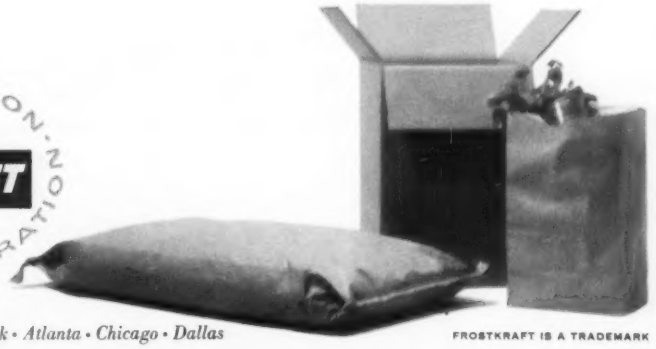

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NOW... automatic, continuous CONSISTENCY CONTROL

You no longer need depend on the "calibrated eyeball" approach to consistency measurement . . . because the new F & P PLASTOMETER measures, records, and controls the consistency of fibrous and pulpy slurries . . . *continuously, automatically!* Apple sauce, tomato products, cream style corn, baby foods, and similar products can now be held well within the tolerances of desired consistency.

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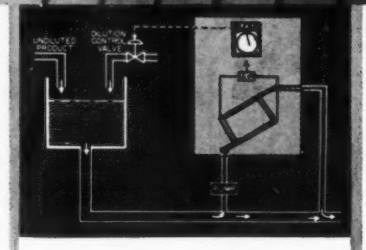

The Plastometer makes use of a simple flow bridge to produce a pressure differential between two reference points. This differential pressure is a direct function of the concentration of insoluble solids in the slurry, and is independent of the viscosity of the liquid phase of the slurry. In the typical installation above, a recording controller is used to throttle a dilution valve as a means of maintaining desired consistency.

FP

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Complete Process Instrumentation

15 New Units for Better Packaging

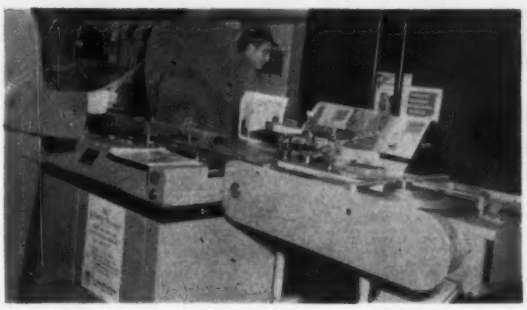
Economy and efficiency are accented in latest high-speed checkweighers, overwrappers, film packers, cartoners, fillers, and labelers seen at PMMI Atlantic City show

3 Latest Checkweighers

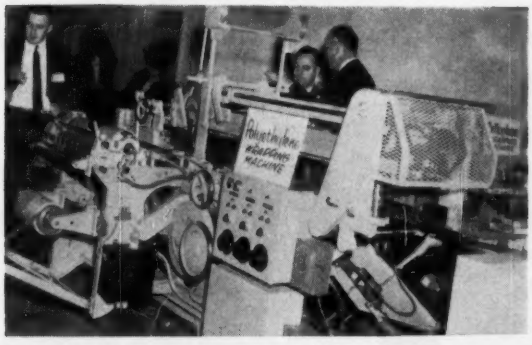
PRECISION UNIT checks packages fed to gravity slide at up to 180/min. Electrical signal actuates underweight-rejection gate or overweight counter. Installing a second gate permits sorting. Operating range: 4-32 oz.—*Wright Machinery Co., Durham, N. C.* (71B)

200-PER-MIN. CHECKWEIGHER has servo-control (arrow) that monitors filler. It translates weight variations into compensating filling adjustments—accuracy to $\frac{1}{8}$ oz.—when definite trend has been established.—*Bartelt Engineering Co., Rockford, Ill.* (71A)

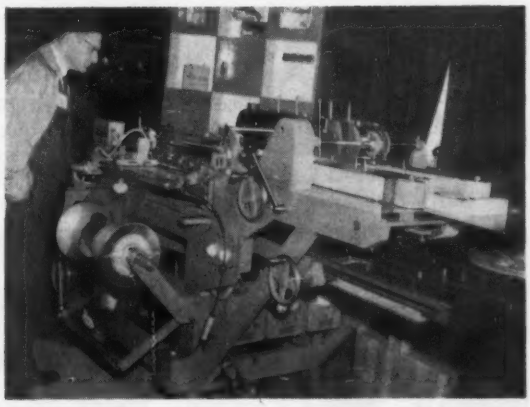
HIGH-SPEED CHECKER spots 1% variations, separates under- and overweight packages at 400/min. Electronic unit's continuous motion enables handling of all container shapes, sizes to 10x10 in. Weight ranges: 1-16 oz., 8-48 oz.—*Food Machinery & Chemical Corp., Packaging Machinery Div., Phila.* (71C)



2 Polyethylene Overwrappers



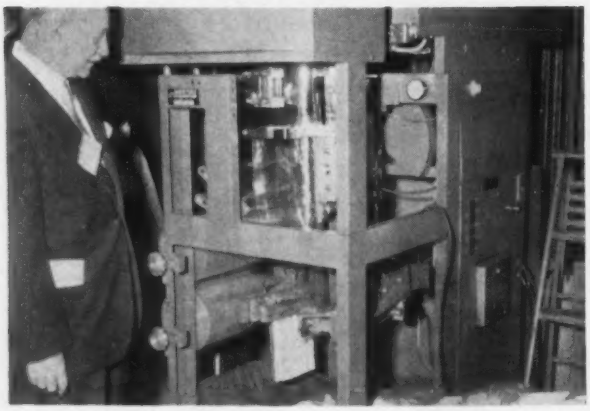
'WELD-SEALER' has special feed-fold-seal system for unsupported polyethylene (1-1¼ mil.) of all densities. Wrapping speed: 50-70/min.—*Battle Creek Packaging Machines, Inc., Battle Creek, Mich.* (71E)



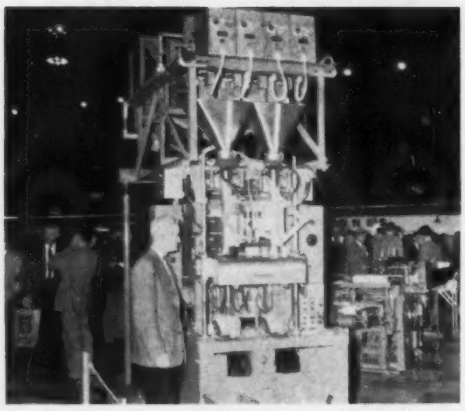
HEATED TEFLON BELTS of efficient wrapper insure uniform sealing. Unit also has glass-fiber balls for slippage of cut film, and static eliminators.—*Hayssen Mfg. Co., Sheboygan, Wis.* (71D)

Turn page for more units ⟶

2 Pouch Formers-Fillers-Sealers

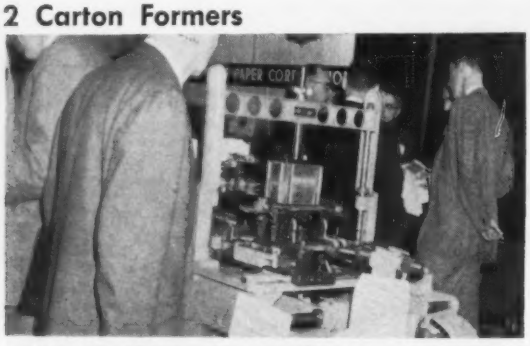


TRIPLE-ACTION UNIT forms film-type bags (1½x2½ to 10x18) from roll stock at up to 45/min., then fills (⅞ oz. to 5 lb.), and heat-seals. It handles potato chips, and can use cellophane and polyethylene interchangeably.—*Mercury Heat Sealing Equipment Co., Phila.* (72A)



FILM-SAVING SEALER on polyethylene pouch packer limits end closures to ⅛-in.-wide strips in forming bags up to 6 in. wide. New net-weight scales boost accuracy.—*Package Machinery Co., E. Longmeadow, Mass.* (72B)

2 Carton Formers



COMPACT UNIT makes polyethylene-coated set-up trays and tuck-lid boxes at 55/min. No adhesive or stay tape required.—*Food Machinery & Chemical Corp., Packaging Machinery Div., Phila.* (72C)

DUAL FORMER heat-seals polyethylene-coated blanks or glues standard cartons and trays at up to 175/min. Blanks range 6-18 in. long, 6½-19 in. wide.—*Peters Machinery Co., Chicago.* (72D)

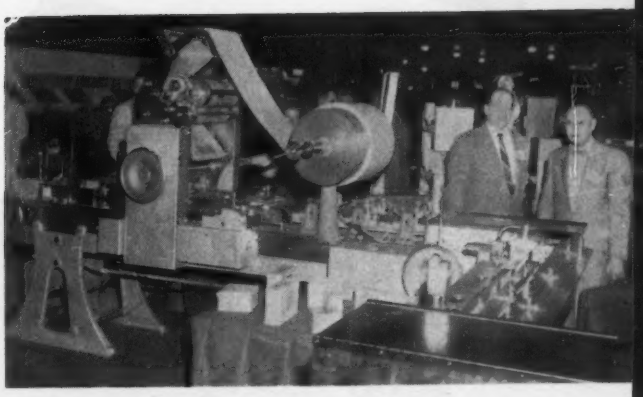
3 Filling Units

CYCLE CARTONER feeds, forms, and fills containers 2-7 in. long, 1¼-4 in. wide, ¾-2½ in. deep. Speed: 40-50/min.—*F. B. Redington Co., Bellwood, Ill.* (72E)

CASE FEEDER (synchronized with packer) has plastic-covered rolls for cushioned loading, quiet nylon bearings.—*Emhart Mfg. Co., Standard Knapp Div., Portland, Conn.* (72F)

ROTARY FILLER for viscous items has sanitary 4-nozzle head fed at 7,000 lb./hr. by Teflon-vane pump. Unit handles ice cream (250 pt./min.), baby foods, whipped butter, etc.—*Anderson Bros. Mfg. Co., Rockford, Ill.* (72G)

Bundler, Bagger, Labeler



HIGH-SPEED BUNDLER collates and bundles various-size cartons with kraft paper. This eliminates hand loading of multiple display containers.—*Scandia Mfg. Co., N. Arlington, N. J.* (73A)

AUTOMATIC BAGGER multi-packs wide variety of items (ice-cream, frozen-food cartons) in paper bags, then tapes unit. Speed: 6-18/min.—*Union Bag-Camp Paper Corp., New York City.* (73B)

CONVEYOR-LINE LABELER, handling containers of any shape or size, attaches roll-fed pressure-sensitive labels at 300 in./min. Compact unit requires little space.—*Derby Sealers, Inc., Derby, Conn.* (73C)

More Top-Notch Equipment

ROLL-LEAF IMPRINTER, which attaches to wrapping or bag-making machines, eliminates ink and drying problems. It applies permanent legends (price, code, date) to cellophane, wax paper, polyethylene, coated foil, etc.—*Adolph Gottscho, Inc., Hillside, N. J.* (73D)

2-LINE FILLER for viscous products handles ¼-128 oz. containers at 10-60/min. Unit has wheel-adjusted head that eliminates nozzle changing, rising table for bottom-up fill, and 'no container, no fill' controls.—*Hope Machine Co., Phila.* (73E)

ACCURATE CASE CHECKWEIGHER handles units ranging to 100 lb. at up to 30/min., separates out-of-tolerance cartons. Precision: ¼ oz.—*Hi-Speed Checkweigher Co., Ithaca, N. Y.* (73F)

CONVEYOR-MOUNTED LABELER automatically applies pressure-sensitive labels to virtually any container or film surface at 40-300/min. Label width ranges ¼-6 in., magazine holds 20,000 labels.—*Avery Adhesive Label Co., Monrovia, Calif.* (73G)

GAS-PACKAGING UNIT, employing special 'flush-back' technique, minimizes residual oxygen in pack to guard shelf-life of many foods. It produces flat packages (1¾-6 in. wide) at 50/min., no stiffeners required.—*Conapac Corp., New York City.* (73H)

TOUCH-BUTTON TAPING UNIT delivers any two pre-set lengths of moistened gummed tape.—*Marsh Stencil Machine Co., Belleville, Ill.* (73I)

TEFLON-COATED GLASS FABRIC for belting offers non-stick, tear-resistant surface that resists temperatures to 600F.—*Dodge Fibers Corp., Hoosick Falls, N. Y.* (73J)

REEL-FED NECK BANDER applies cellulose bands to bottles and wide-mouth jars at up to 210/min. Seal length and diameter range ½-3 in.—*John Burton Machine Corp., Concord, Calif.* 73K

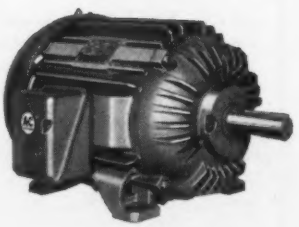
For more information circle key numbers on Reader Service Card, back of book.

long-run power by Allis-Chalmers

Newly applied food process uses Allis-Chalmers motors

For better milling, here's a separation process to produce individual flours for specific bakery products. It's done by turbo-milling, developed by Pillsbury Mills. Allis-Chalmers motors furnish power for the turbo-grinders and separators which produce hurricane winds required for this reduction process.

Turbo-milling is only one of many long-run milling operations for which Allis-Chalmers motors have been selected to handle day-in, day-out performance requirements. What contributes to the long-run power in Allis-Chalmers motors? MORE stator protection; MORE use of iron; MORE cooling surface.



For the long run, specify Allis-Chalmers motors as new components or as replacements. Contact your A-C representative or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wis.

ALLIS-CHALMERS

A-5577

JUST AS LONG AS HE... NEEDS HER...

TAYLOR WILL BE HERE TO SERVE YOU!

AS LONG as there are babies, there's going to be a milk industry. And as long as there's a milk industry, you can count on Taylor service!

When you specify "Taylor Equipped As Usual," you specify instruments that are designed to go far beyond the strict requirements laid down by the Milk Sanitarians. These instruments have been developed through many years of close cooperation with the dairy equipment manufacturers and pioneering milk plant management, in a continuing development program that has produced many Taylor "firsts" in the milk industry. The maintenance of these high standards is assured by Taylor's nation-wide field service.

For information about how Taylor Control Systems can be useful in *your* process, see your Taylor Field Engineer, or write for **Catalog 500A.** Taylor Instrument Companies, Rochester, N. Y., or Toronto, Ontario.

Taylor Instruments MEAN ACCURACY FIRST

EASY-TO-FIX peanut butter neatly dispenses from aluminum tube in a ribbon that needs no smooth-out with a knife. Convenience features of fold-up container makes product popular for away-from-home use, such as in office, on picnics.

Taps 'Away-From-Home' Sales With

Regional packer uses collapsible metal container to build plus-volume in new fields for peanut butter . . . Slit-type opening that 'pre-spreads' product enhances convenience appeal

PACKAGING'S KEY ROLE in sparking impulse sales is self-evident. Even so, its potential for building a profitable flow of *extra sales through* new uses is often overlooked.

Smaller manufacturers, especially, stand to gain through exploiting different-type packages with merchandising appeals counter to the big-ticket promotions of national brands.

One such firm doing just this—and winning new sales against rugged competition—is H. B. DeViney of New Bethlehem, Pa., maker of Kitchen King peanut butter. A regional packer who has to fight hard to hold his market position against well-known brands, DeViney is supplementing his conventional glass jar with an aluminum tube container (developed by A. H. Wirz, Chester, Pa.). And with this package-merchandising tool he's on his way to tap additional sales in fields where peanut butter was never sold before.

By using the tubes, DeViney expects to (1) increase the product's away-from-home-use (in the office and shop, on picnics or trips) as a result of the tube's convenient size and product's easy spreading characteristic, (2) open up new and special in-the-home use for fast party and TV snacks, (3) catch more store traffic by displaying the containers away from the peanut butter section, and (4) gain a competitive edge by being first.

The innovation comes at a time when tubed foods (which account for about 2% of collapsible metal containers) have been spurred by:

▶ **Development of line machinery that outspeeds present 30-40/min. filling rates.** Carbert Mfg., Cambridge, Mass., has just brought out a 60/min. unit and is working on a machine with twice that speed. Further, high speed fillers (60/min. single-fill, 120/min. twin-fill) for polyethylene tubes were recently introduced by Saga Packaging Machinery, Southbridge, Mass., and Arthur Colton Co., Detroit.

▶ **Improved design for stronger in-store impact.** Outside cap for Krim

Creating The Package

FOR EXTRA PROTECTION against squeeze-happy youngsters, tubes are individually boxed. Also, cartons stack well. And double-duty shipping container can act as its own display unit, complete with fold-out panel that flags shopper's attention to tube's quality-retention, no-waste features.

Squeeze-Tube Product

Ko's fudge sauce is as wide as the squeeze-type container – permitting the tube to be stacked upright for better visibility and neater display.

▶ **Greater variety of food products in fold-up tubes.** Paste-type items have dominated the picture up to now, but there are signs that fast-moving items will be tubed in the near future. Nearing market introduction are mustard and maple syrup items to be sold in plastic tubes made by Bradley Container, Maynard, Mass.

▶ **Adaptation for vending machines.** Airtight protection given by the tubes extends product shelf-life, makes these items ideal for automatic venders, since daily replacement isn't necessary.

Peanut Butter Problems

Behind the peanut-butter-in-a-tube idea is a long cooperative effort between DeViney, Wirz and Arenco Machine (filling equipment manufacturer). A leading manufacturer of metal tubes, Wirz for years has been trying to adapt them to food products. Two basic problems were faced in shaping the tubes for peanut butter—opening and cap.

Wirz favored a slit-type opening (¾-in. wide, ¼-in. deep) so the product would come out in a flat ribbon, enhancing product appeal and making the butter simple to lay on crackers or bread without need for spreading.

With this as a starter, Wirz next developed a neck with a wider than ordinary diameter to accommmodate the slit. In turn, a special top had to be designed, because no standard cap would fit the neck.

Liner Does the Trick

At first, there was some leakage around the bottom of the hard plastic cap from the hydrogenated peanut oil content. This was overcome primarily by slight product reformulation. In addition, Wirz took steps to see that there was a good seal between the silite cap liner and the cap. The aluminum tube itself needed no inner liner for the peanut butter.

For design effectiveness, Wirz developed special inks for the aluminum tube, since normally-used inks wouldn't resist smeared peanut oil. Lettering is offset printed against a white background for easier readibility.

Upended 6-oz. tubes (with cap on) are filled from bottom up on a standard Arenco machine presently operating at 30-40/min. Higher filling speeds are possible when required. Bottoms are crimped after the tubes are filled.

To get full benefit from the innovation, DeViney markets the tubes individually boxed. Purpose is to prevent youngsters from squeezing peanut butter from the tubes in the store (a playful trait which doomed Musselman's attempt to sell tubed apple-raspberry jelly some time ago).

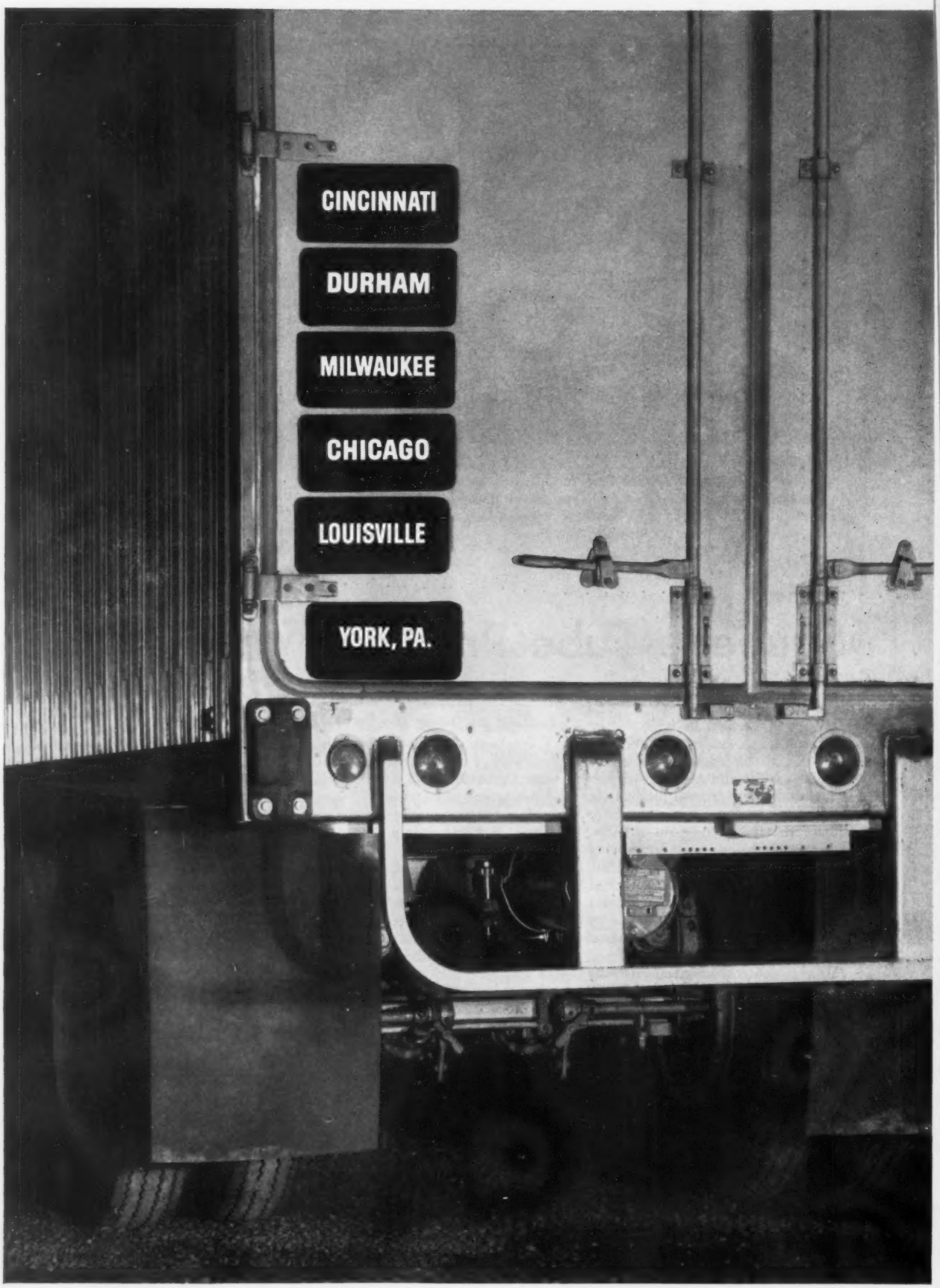
Also, the boxes provide a better display, since they can be neatly stacked. And the 12-tube master shipping carton (7¼x8x12 in.) does double duty as a counter-display unit.

Elaborate marketing plans were drafted to give the tubes strong introductory support. Prior to the product's appearance, The Ullman Organization, Philadelphia, a marketing agency, checked the reaction of several supermarkets in western Pennsylvania (selected as the test site) for retailer handling practices in regards to peanut butter.

Most stores, it was found, normally stocked jarred peanut butter in a specific section of its own. However, in the case of tubed peanut butter—because of its special appeal for home snacks, picnics, and parties—retailers were asked to display the product adjacent to the cracker, bread, or specialty food departments (in addition to the regular peanut butter shelf location). A few gourmet shops were also included in the test to determine the relative sales activity of the product here vs. chain stores.

Initial promotion themed the away-from-home uses of tubed peanut butter. Product's easy-fix application for lunch boxes, office snacks, picnics, and on fishing or hunting trips was stressed. Following this tack, DeViney plans to sell the tubes from gas stations, where hungry motorists can pick them up for a snack.

To lay the groundwork for future merchandising, the company is using a postcard survey to get consumer reaction to the food-in-tube idea. Purchasers are asked for their views on how they used the product, whether they plan to rebuy, what size (6-, 8-, 16- or 32-oz.) is preferred, and how frequently they stock peanut butter.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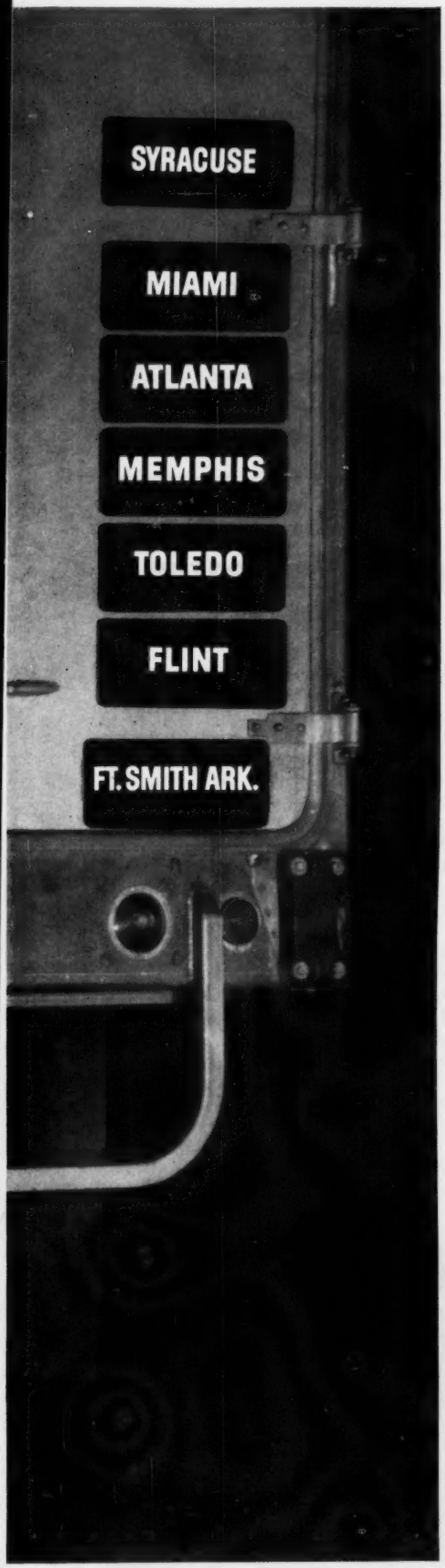

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Fast, on-time deliveries are a major feature of every Mead corrugated shipping container plant.

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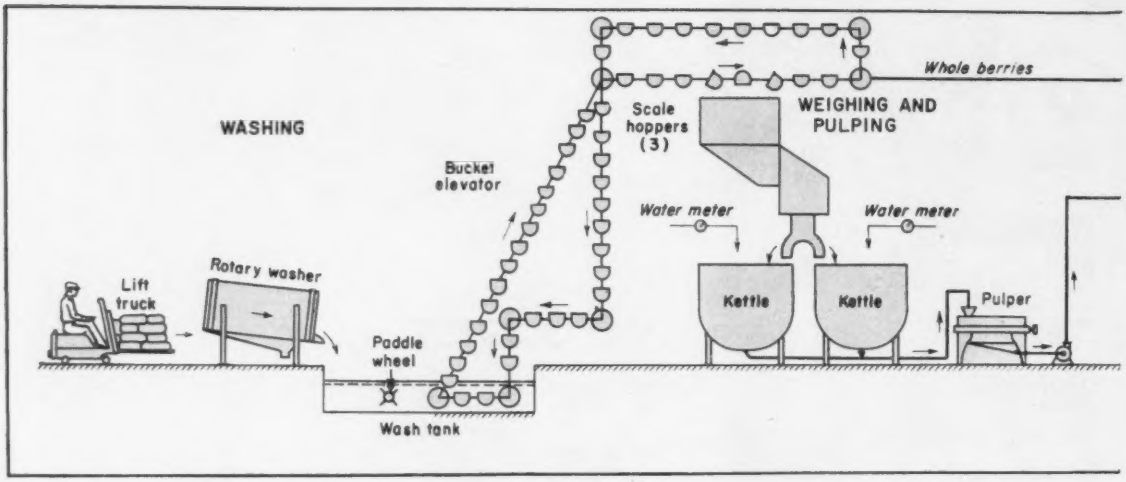


This Streamlined Layout

Topflight handling system whisks cranberries through sauce lines to warehouse in unimpeded flow

PROCESSING ONE VARIETY of fruit in large volume and over the entire year is a unique characteristic of the efficiently laid out plant of National Cranberry Assn., North Chicago, Ill.

In this 100,000-sq-ft. facility, more than 60 tons of cranberries are processed each 8-hr. day into the company's two products—jellied and whole fruit sauces.

The plant is essentially a 1-story facility with a 3-story section devoted to in-plant handling of empty cans, storing of frozen berries, and processing. Speedy, unimpeded movement of fresh cranberries from incoming trucks to processing, canning, packing, and storing of finished sauce takes place on ground floor.

Storage Extends Season

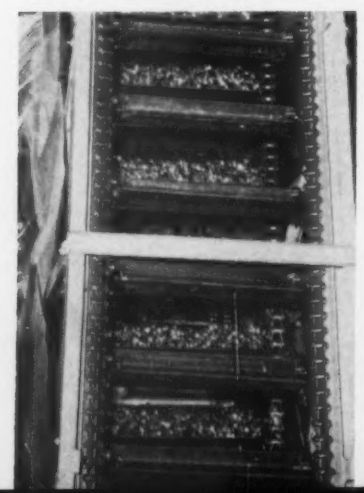
Fresh, cleaned berries (in 50-lb. bags) start arriving around the latter part of September, and continue coming in through October and early November. Berries needed for processing are used immediately. The excess is accumulated in a 12,000-bbl.-capacity, 0F. storage to enable year-around operation.

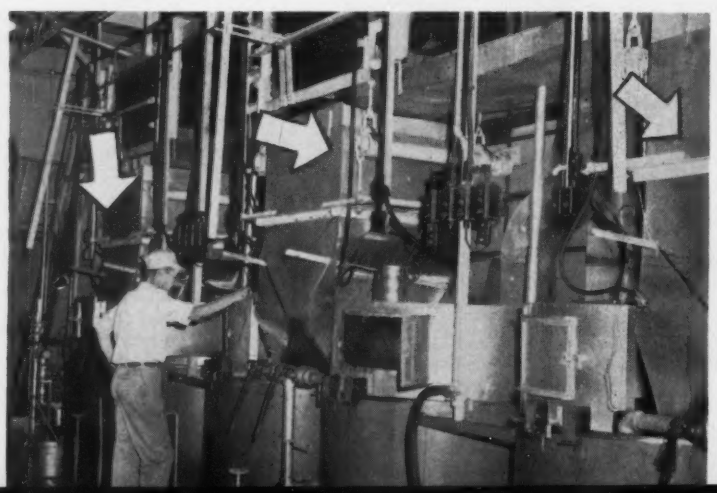
On arrival, bags are stacked 30 to a pallet. Fork-lift trucks transport them over a floor-level scale, and then to areas adjacent to the two processing lines.

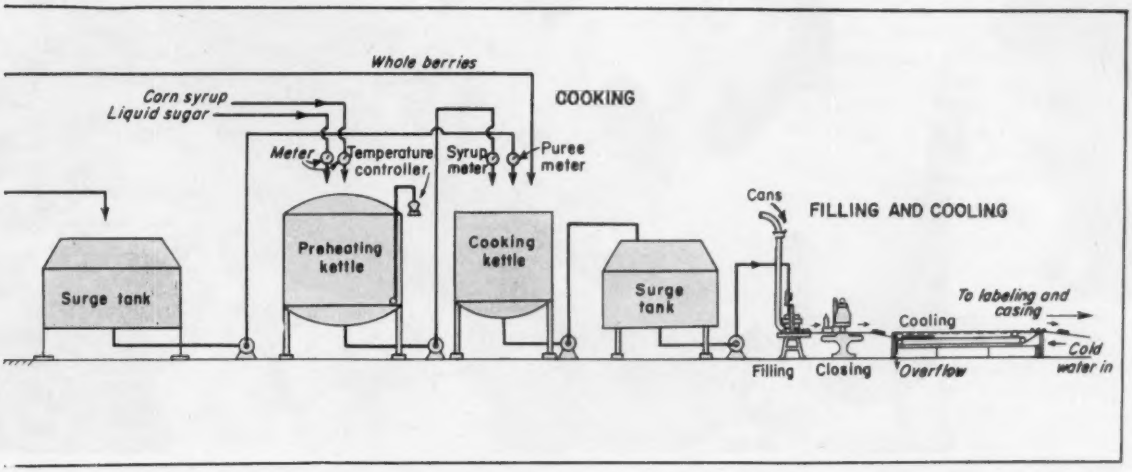
Corn syrup and liquid sugar are delivered by tank trucks, and stored in 10,000-gal. tanks in the processing area. When needed, they are metered to a 2nd-floor, steam coil-equipped pre-heating tank. Here, the syrups are blended and heated to 160F. to speed up kettle-cooking operations.

Ten box cars of incoming empty cans can be spotted on a double-spur track adjacent to the 3-story processing section. Emptied of cans, box

FAST FEEDLINE AND HEATERS. Left: Perforated bucket conveyor elevates washed cranberries to 3rd floor processing area. Right: They go into weigh hoppers (arrows), then pour into kettles (below) for heating to 190F. Later, berries go to pulper, where skins and seeds are removed.







Assures Superior Sauces

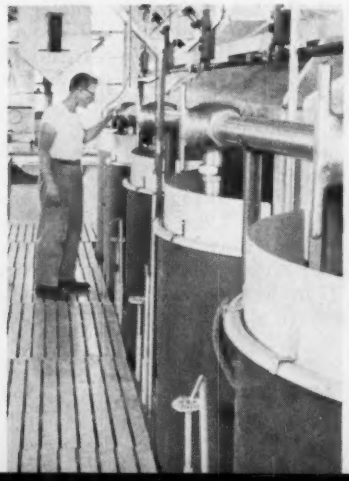
cars are then loaded with palletized cased goods for out-going shipment.

Shipping cases, strapped 1,200 in flat form to a pallet, are fork truck-transferred to the case-packing area.

Jellied Sauce Line

For the making of jellied sauce, fresh berries are emptied from bags into a dump hopper feeding a rotary washer (see accompanying flow diagram). From here they drop into a catch basin, where a 4-paddle reel propels them through wash water to a perforated bucket-type elevator.

PUREE is pumped from the pulper to this battery of steam-jacketed kettles, where it is mixed with heated corn syrup-liquid sugar blend and cooked to desired solids content. Sauce is then filled hot into No. 210, 330, and 10 cans.



Upon reaching the 3rd-floor processing area, this elevator travels horizontally a distance of 30 ft. to charge berries into three (600-lb.) stationary scale hoppers. Each of these feeds two 250-gal. steam-jacketed kettles. Alternate loading of hoppers is achieved by hand-operated rods that trip the conveyor buckets. As berries are scaled to a pre-set weight in a hopper, conveyor is automatically cut off. It starts up again when cookroom operator is ready to fill the second kettle.

Berries are dumped into kettles, then water is metered in, and the batch is heated to 190F. Automatic temperature controls terminate the cook.

Pulping, Cooking, Canning

Batch next drops into pulper and finisher on the 2nd floor. Pulp and seeds are discharged as waste, and puree is pumped to a 400-gal. stainless steel surge tank, which supplies a battery of six, 250-gal. steam-jacketed kettles on the 3rd-floor.

The pre-heated corn syrup-liquid sugar blend is fed to each kettle through totalizing-type meters. Cooked to the proper solids content, sauce is gravity-fed to still another stainless surge tank on the floor below.

Then it proceeds to 10-, 14-, or 20-pocket rotary fillers (FMC and Pfaudler), with respective capacities of 220, 260, and 400 cans per min. Seamers (4- and 6-spindle) automatically seal the cans. Then they move through continuous spray and double-deck spinner coolers, which reduce temperature to about 100F.

Cans continue, through wrap-around-labelers and semi-automatic case packers, to automatic case gluers and sealers (Ferguson and Standard-Knapp).

Cased sauce is loaded onto pallets that are stacked three high in the 200,000-case finished-goods storage area.

Whole-Berry Sauce

With a few exceptions, the whole-berry sauce process is similar.

Pallet-loads of bagged berries are transported by lift-truck and freight elevator to the 3rd-floor processing section. Here, they are dumped into a hopper feeding a rotary spray washer. Then they proceed over a 3x20-ft. inspection belt and into a second rotary washer.

Discharged into a water pit, berries are picked up by a perforated bucket-type elevator that raises them 25-ft. for discharge into two scale hoppers supplying four steam-jacketed cooking kettles.

Pre-heated liquid sugar-corn syrup blend and water are metered into the kettles. When cooked to desired solids content, the sauce by-passes pulper and finisher as it is gravity-fed into a stainless steel surge tank servicing the canning line. —*End*

THREE EGG-BREAKING lines, each with 34 stations, pace operations in new facilities. Variable-speed conveyors permit

Rx for More Output and

How astute modernization has brought striking new vigor at Midwest egg-processing plant . . . Figuring in 'formula': New units and devices, key layout, improved processing and inspection techniques

OUR SUCCESS PRESCRIPTION? It's just this: Top sanitation and quality control in expanded modern facilities—equaling greater flexibility in production of more and better egg products.

And what we save goes back into installations designed to improve our products as well as further boost operating efficiency.

Here's how the formula was put to work in the plant-improvement and expansion program at our company—Tranin Egg Products:

In setting up for a 30% increase in production, our president, William F. Leimert, emphasized these three major approaches:

1. Select only those facilities that will, in all cases, improve sanitation and quality.
2. Consider only a streamlined plant layout to shorten processing time.
3. Adopt any innovations or modifications, no matter how small, that will up sanitation, quality, and operating efficiency.

CYCIL B. HARTMAN
Sales Manager, Tranin Egg Products Co., Kansas City, Mo.

Step-wise, here's how we went about making the changes:

A. Forced air ventilation system was installed to maintain dust-free conditions and to provide worker comfort in the processing areas. Outside air is sucked through Fiberglas filters and blown past a steam-coil heater with motorized control valve. Thermostatically controlled to 75F., the air is then circulated, at 13,500-cfm. Areas are maintained under a slight positive pressure. And there's a complete change of air every 4 min.

B. Kitchen sanitation. Adjacent to processing is a separate room with glazed tile walls, for cleaning and sanitizing equipment used by egg breakers. Procedures have been set up to clean this equipment every 2 hr.

Room contains two 3-compartment, stainless steel sinks for detergent cleaning, water rinsing, and sanitizing with chlorine (200 ppm.). Cleaned equipment is air-dried on a 6-shelf, perforated stainless steel rack along one wall. And enough surplus equipment is maintained for a 2-hr. changeover.

C. Conveyors handle most materials from receiving to churning. To meet production needs, speeds on the three egg-breaking lines can be altered by manual adjustment of variable-speed drives (Reeves) hooked with gear drives (Link-Belt).

In this way conveyor-belt travel can be "placed" for different productions. For example, speed can be increased when girls on a line are "breaking out" whole eggs. Or it can be reduced when they are separating whites from yolks. Moreover, girls monitoring each line can increase or reduce belt speed in accordance with amount of eggs being supplied. And they can also start or stop conveyors transferring eggs from the candling room.

Following are some examples of the jobs performed by conveyors:

Receiving to storage: Cases of country-fresh eggs are conveyed by an inclined belt from receiving dock to 3rd-floor cooler (40-42F.), where they are stacked 30 to a pallet for transfer to candling lines.

Candling to egg washer: Eggs are transferred 3 doz. at a time from cases on three candling lines onto chain-driven metal-rod conveyors (12-in. wide). These conveyors were selected to prevent loose feathers and

any production up to 2,500 cases per day.

Better Quality

NEW "KITCHEN" contains facilities for cleaning and sanitizing egg-breaking utensils, which are changed every 2 hr. to insure constant sanitary procedures.

other hen-house debris from passing into the egg-breaking room.

Eggs are speedily candled as they travel along each conveyor and over a 30-in.-long diffused glass plate with four 60w. light bulbs. Dirty eggs are transferred to a 6-in. wide transverse belt that carries them to an egg-washing machine.

Leakers are loaded onto specially designed portable racks, each holding 12 trays. Three dozen such eggs are nested in each tray, which contains a perforated separating plate. System facilitates inspections, since trays easily slide out of racks. Shell damage, leading to possible product contamination in conventional stacking, is thus avoided.

Empty cases: These are conveyed from candling lines to receiving dock for re-use at egg pickup stations.

Egg-breaking stations: Transfer from candling to egg-breaking lines is accomplished 36 eggs at a time by two 12-in.-wide conveyors—and without breakage, as was formerly suffered when they were transferred 8 at a time.

Eggs move on a Koroseal belt (with 6-in. return) on the three breaking lines, each of which contains 34 egg-breaking stations. To avoid contamination, each belt gets a water-spray from a perforated pipe, then is dried by a spring-actuated rubber-canvas strip mounted directly below the return pulley.

Collecting-pails: Overhead chain conveyors transport suspended pails, containing 14-lb. of freshly broken eggs, from breaking lines to churns. Pails are color-coded to show yolks, whites, or whole eggs.

D. Beefing up processing. Churning and stabilizing are the keys to quality production of eggs going to freezers or dryers. Specially prepared at this stage are whites, yolks, whole eggs, and special blends like fortified whole eggs.

Liquid eggs are emptied from pails into two rectagular, stainless dump tanks (600-lb. capacity). These are compartmentized by center-mounted, fine-mesh vertical screens to keep small shell pieces out of discharge section. A Tranin egg mill (specially designed 1½-hp. pump) churns yolks and whole eggs as they are fed to 300-lb. churns equipped with vertical agitators. Feed from each dump tank is directed by 3-way valves to either of a pair of churns so two batches can be simultaneously processed.

For custom-made products, salt, sugar (or both), or malt are blended into the batch. A 1½-hp. Waukesha pump now forces churned eggs through bottom of two stainless standardizing tanks (4,000-lb. capacity). Here, solids content is adjusted as batch is recirculated. Another egg mill pumps processed eggs to a Kent strainer—a rectangular stainless vat with a vertical screen. Product is now ready for freezing or drying.

Liquid whites, on the other hand, are egg-mill delivered from dump

IN CHURNING DEPARTMENT liquid eggs are strained (right), pumped to churns (left), filled in containers (rear) for freezing.

tank to a compartmentized straining tank containing three fine-mesh vertical screens. Viscosity tests are taken, and mills are accordingly adjusted. Compartmentizing permits simultaneous filling and emptying.

Processed eggs are finally filled into 30-lb. tins and 30- and 45-lb. polyethylene-coated fiberboard containers for delivery to freezer. Or they may be piped to 250-gal. transport tanks for fork-truck transfer to dryers. These tanks are stored in cooler prior to filling so as to aid chilling of liquid eggs during handling.

E. Economical package. Consumer convenience was another objective when Tranin pioneered application of double-coated polyethylene, spiral-wound fiberboard containers (Sealkans by Sealright Co.) for frozen eggs.

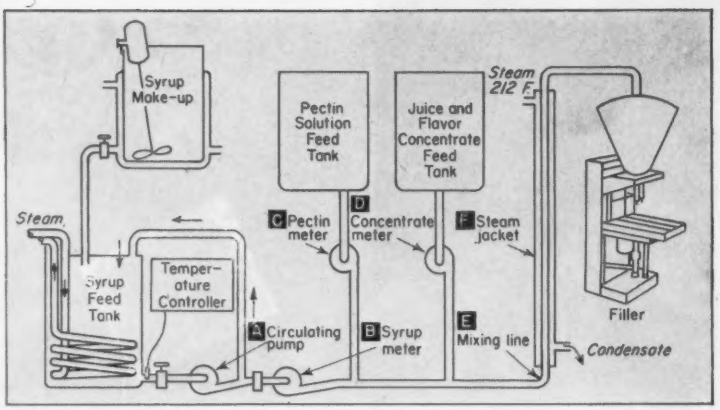
Shipped flat, these low-cost containers save freight and require less labor for unloading and moving to warehouse and filling room.

One skidload, for example, is enough for 45,000 lb. of product, while a similar skidload of preformed tins hold only 6,720 lb.

Users can simply and neatly strip paper sidewall from frozen egg slug, avoid bacteria build-up from slow thawing, and flatten paper scrap for easy disposal.

The frozen egg slug can be easily reduced to "snow" for ready use in about 1 min. by running it through a suitable mill, or it can be liquefied at a 1,000-lb.-per-hr. rate by a centrifugal unit. —*End*

"Hanshaw—drop whatever you're doing and come to the office!"



Here's setup for continuously processing—

Fine Fruit-*Concentrate* Jelly

Metered amounts of cold concentrates and hot sugar syrup are combined to give products with top flavor and color

A SWITCH to continuous processing is always accompanied by advantages. And this is especially true of the new continuous jelly-making process recently developed at WURDD.

For in addition to the usual savings, use of fruit-juice concentrates—instead of single-strength juices—results in the following money-saving and product-improving benefits—

1. Cost of transporting juice from growing area to jelly-making plant is greatly reduced.

2. Storage costs are less.

3. Flavor of finished jelly is improved, since the juice is not exposed to boiling temperatures.

4. Color of product is better, for there is no caramelization during processing.

In the new process, metered amounts of cold concentrate and pectin solution are mixed with hot sugar syrup continuously.

Juice Gets Low-Heat

In modern concentrating equipment, fruit juice is not heated to a high temperature for a long time. Furthermore, the evaporators can be fitted with volatile-flavor stripping and recovery units. Then the recovered solution can be added back to the concentrate to give a more nearly natural flavor than is possible with open-kettle cooking.

Since a high pectin juice may gel during concentration, it is simpler for both concentrator and jelly manufacturer if all the pectin is removed from the original juice. Then the jelly maker can add the desired amount, knowing the concentrate contains none. However, some juices may contain so little natural pectin that they may be clarified and concentrated easily without depectinizing.

With a clear, pectin-free, full-flavored concentrate as a starting material, it is fairly simple to process this into jelly on a continuous basis. All that is necessary is to mix and dissolve ingredients in proper proportions, with only such heating as needed to accomplish this and to pasteurize the jelly.

How It's Done

The jellies consist of depectinized fruit juice concentrates, sucrose, invert syrup, fruit acid, pectin, and concentrated volatile-flavor solution recovered from the original juice.

For their manufacture, syrup (75-80% sugar) was made from dry sucrose and boiled to remove air

J. D. PONTING, D. W. SANSHUCK and J. E. BREKKE

Western Utilization Research & Development Division, USDA, Albany, Calif.

bubbles that apparently were trapped around the sugar crystals. If these were not removed they carried through into the jelly as scum. Sugar concentration was varied, depending on juice concentration.

Pectin was dissolved in water to make a 4% solution. Juice and flavor concentrates (a 4-5-fold concentrate was used), with acid dissolved in them, were prepared separately.

Whether acid is added to the formula depends on pH of the fruit used. By adjusting pH of jelly mix to about 3.1, proper consistency was obtained with 0.4% pectin. When pH of mix without added acid was 3 or below, 0.35% pectin was used.

In the pilot process, syrup was made up in a 50-gal. steam-coil-equipped tank. It was circulated by means of a centrifugal pump–(A) in our drawing. Temperature of syrup was maintained at just below the boiling point by a temperature controller comprised of a thermocouple in the syrup line and an electronic valve in the steam line.

Hot syrup was fed to the mixing line by metering pump (B). Cold pectin and concentrate solutions were metered into the hot syrup by pumps (C) and (D), respectively. Since addition of these cold products reduces temperature of mixture to about 170F., riser (E) from mixing pipe to filler was enclosed in 3-ft.-long steam jacket (F). Steam at atmospheric pressure was used to bring jelly temperature to 180F.

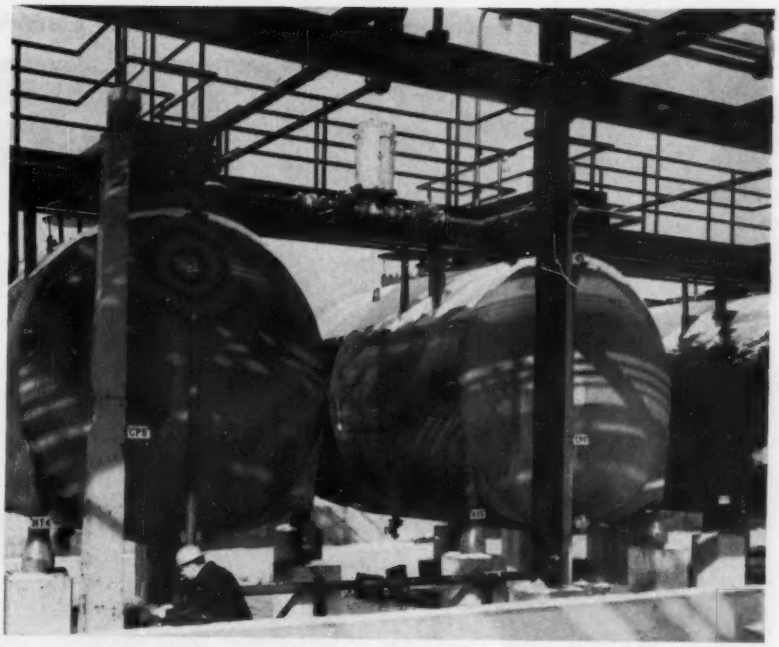
The pilot plant was scaled to produce jelly at a maximum rate of 600 lb./hr. However, it was usually run at only 300 lb./hr. No mechanical difficulties arose, probably due to the simplicity of the assembly.

For strawberry jelly, the metering pumps were calibrated and set to handle the formula given below. At the rate of 300 lb./hr. it took 20 min. to make 100 lb. of jelly. So weights of the three solutions given in the formula are divided by 20 to get speed of each pump in terms of lb./hr.

Excellent 50/50 Strawberry Jelly (Formula for 100 Lb.)

Product	Weight (Lb.)	Concentration	Sugar (Lb.)
Syrup	78.3	77 Brix	60.3
Juice concentrate	11.7*	41.9 Brix	4.8
Pectin	10.0	4% sol.	...
Total wt.	100.00	..	65.1

* Contains 0.12 lb. 100-fold volatile flavor concentrate and 0.2 lb. citric acid.



Glassed-steel tanks are widely used for storing foods, especially where flavor can be affected by the presence of metal.

What flavor are your storage tanks?

Unlike many metals, glassed steel has no flavor.

Look then to Pfaudler glassed-steel tanks when you have an ingredient or food whose flavor you want to protect.

Acidic fruits, liquid sugars, flavorings, treated water, and the like are never contaminated by glassed steel.

Nor do such substances *corrode* glass, so you can expect longer than usual life from our glassed-steel tanks and they are economical.

The expression "smooth as glass" explains why you'll find cleaning much easier, too.

Pfaudler glass is permanently bonded, physically and chemically, to the steel. The glass can never shatter. This material has for many years been a standard in the pharmaceutical industry where sterility and noncontamination of product are paramount.

Pfaudler glassed-steel storage tanks run from 500 to 35,000 gallons in both vertical and horizontal designs. Tank openings are arranged to your requirements.

Check the coupon for more information on these tanks and other integrated food process equipment.

FOOD EQUIPMENT BY PFAUDLER

THE PFAUDLER CO.

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Please send bulletins on ☐ Glassed-Steel Storage Tanks; ☐ Heat Exchangers; ☐ Centrifuges; ☐ Dryer-Blenders; ☐ Rotary Piston and Gravity Fillers; ☐ Wiped-Film Evaporators.

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Today, A-L produces more different sizes, shapes, finishes and alloys of stainless than any other company. Backing up its quality products are research and development facilities with people second to none.

With know-how and experience gained over the years, Allegheny Ludlum keeps little of it secret: it offers the most complete selection of literature available anywhere.

Literature, designed to help you learn more about Allegheny Stainless and how it can improve your product, is just one help offered by Allegheny Ludlum. You also get the best assistance from trained salesmen and technicians, ready to help you on your specific problem.

All this service is available through your Allegheny sales engineer. Call him today. Or, as a starter, write for the publication list describing the over 150 technical pieces made to assist you.

Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pa. Address: Dept. FE-5.

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Export distribution: AIRCO INTERNATIONAL

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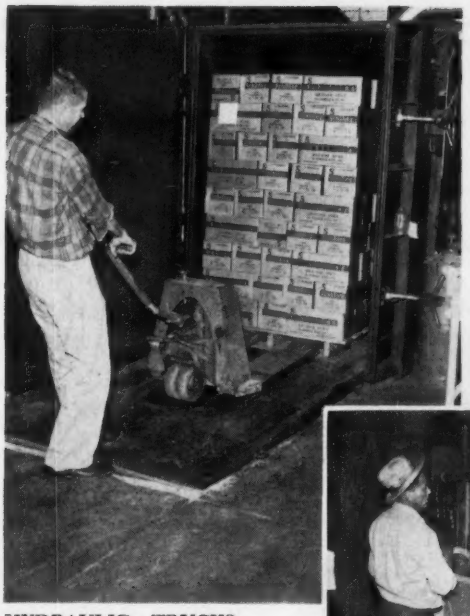
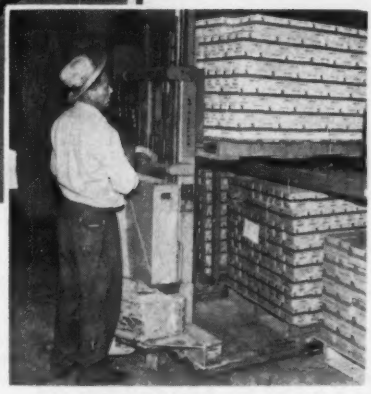
RIDER VEHICLES (4,000-lb. capacity) whisk loaded pallets to storage areas on first floor.



HAND HYDRAULIC TRUCKS, similar to one seen moving load of spices into vacuum fumigator, are used exclusively in 2nd floor processing area.



ELECTRIC WALKIES move palletized loads via elevator, bridging gap between 2nd and 1st floors.

Balanced Handling Trims Costs

Spice maker teams hand and electric lift-trucks to minimize in-plant expense. Gets extra storage capacity, more efficiency

"PROPER BALANCE between power and hand-operated lift-trucks has given us 6,875 sq. ft. of additional space in our warehouse alone."

This, according to W. C. Duncan, warehouse manager, McCormick Co.'s Schilling Div., San Francisco, is one of several benefits won with the company's new materials handling techniques.

Here, greater efficiency has been attained—and at a cost saving.

Walkie Vs. Rider

When considering the switch from manual to powered handling, company executives realized that, while rider-type units have numerous in-plant applications, hand trucks continue to be advantageous for certain situations.

The hand equipment is especially effective where you've got—

1. Low floor capacities.
2. Short hauls.
3. Infrequent use.

All three of these conditions existed on Schilling's second floor. Here, hand trucks are used exclusively to transport pallet loads of materials from one working station to the next in the production line.

Hand trucks are also utilized in the receiving department for moving palletized materials from dock to storage area.

The trucks (Lewis-Shepard Products, Inc., Watertown, Mass.,) have a 2,500-lb. capacity. Each raises its loads hydraulically to heights of 7¼ in. by pumping a foot pedal.

Company also has six electric units (L-S) of two types—"Walkie" trucks operated from a control handle, and rider units.

Both high-lift and low-lift models are included among the walkies. The low-lift ones are similar to the hand trucks, except for having an electric power package. They're used strictly for transporting goods. The high-lift trucks, on the other hand, transport and high-stack pallet loads.

Where longer distances are involved, rider vehicles are used. Mc-

When ounces overweight can mean lost dollars . . .

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Control your package weights, and costs, with the precision accuracy of Exact Weight Scales. These fast-weighing, fast-reading scales for packaging and checkweighing are extremely sensitive to the finest degree for close weight tolerance, yet simple to operate and give dependable service. Visible over-and-under indication can be read accurately at a glance. Model 103, above, provides one inch indicator travel equivalent to one ounce. Capacity 3 pounds. Write today for full details on the complete line of Exact Weight Scales.

MODEL 273 Exact Weight Scale for high-speed packaging or checkweighing. Only 1/16" lever fall. Indication of ⅛ ounce over-or-under easily visible to operator. One inch indicator movement equals 1 ounce of weight. Capacity 12 pounds.

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BETTER QUALITY CONTROL . . . BETTER COST CONTROL

Cormick has one high-lift and one low-lift unit of this type. All the trucks are capable of maneuvering loads in aisles as little as 6-ft. wide, and they can pass through doorways as low as 7 ft.

"In fact," points out Duncan, "this equipment was built to fit our building's low-capacity elevators and low doorways."

Both finished and unfinished goods are placed on 40x48-in. wing-type pallets. These are stacked three high in the first-floor storage section. Small lots, or pallets carrying small boxes, are placed in storage racks, while others are just tiered one atop another. This technique is employed to prevent damage to the smaller containers and conserve space. After goods have gone through the various production processes and are packaged, electric walkies bridge the gap between the second and first floors, taking palletized loads down via an elevator. Loads are deposited on the first floor, then picked up by rider-type trucks.

A reverse cycle is followed in transporting raw materials from storage to production.

When supplies are required in the shipping room, a high-lift walkie takes them from the finished-products storage area. This truck is also used for order picking in the shipping room and loading outgoing delivery trucks.

A big factor in selecting the hand and electrically powered types was their smokeless, odorless operation—a necessity in food processing plants. Also, the electrics can be 'refueled' right in the plant at a convenient battery recharging station. —*End*

"Great idea, huh Boss? It really insures careful handling!"

CONTOUR TRENTWELD TUBING is available in a wide range of grades including Hastelloy,* Zirconium, Zircaloy, Titanium, 19-9-DL — and in 10 basic tubing classifications (pressure, mechanical, aircraft, heat resistant, ornamental, sanitary, beverage, large diameter, shaping and formed tubing).

*Trademark of Haynes Stellite Co

get high strength and uniformity with **TRENTWELD** stainless and high alloy pipe and tubing (*sizes range from 1/8" to 40" O. D.*)

As Trent makes them, today's welded pipe and tubing are as strong as – and even more uniform than – pipe and tubing made by any other method of manufacture. That's because (1) an exclusive welding process (Contour Trentweld®) virtually eliminates any bead or undercut, and (2) cold working and annealing after welding make the weld equal in strength and corrosion resistance to the parent metal.

Furthermore, Trent checks the quality of its pipe and tubing with a series of strict tests. All strip going into the welder is checked for width and tolerance. Samples of each lot are tensile tested. Periodic tests – flattening, reverse bend, flare and flange, coil and pressure – are conducted. Pipe and tubing for corrosive applications get rigid corrosion tests. And, if necessary, "single-wall" X-ray inspections, exclusive with Trent, can be made on any lot.

Naturally, pipe and tubing made to these standards can't be surpassed for strength, uniformity and service. But get complete details –

Mail coupon for free 48-page Trent tubing handbook — contains complete data on physical, chemical, electrical properties, corrosive data, theoretical weights, hardnesses, etc.

CONTOUR TRENTWELD

TRENT TUBE COMPANY

Subsidiary of Crucible Steel Company of America

General Offices, East Troy, Wisconsin

Gentlemen: Please send me the 48-page Trent Tubing Handbook.

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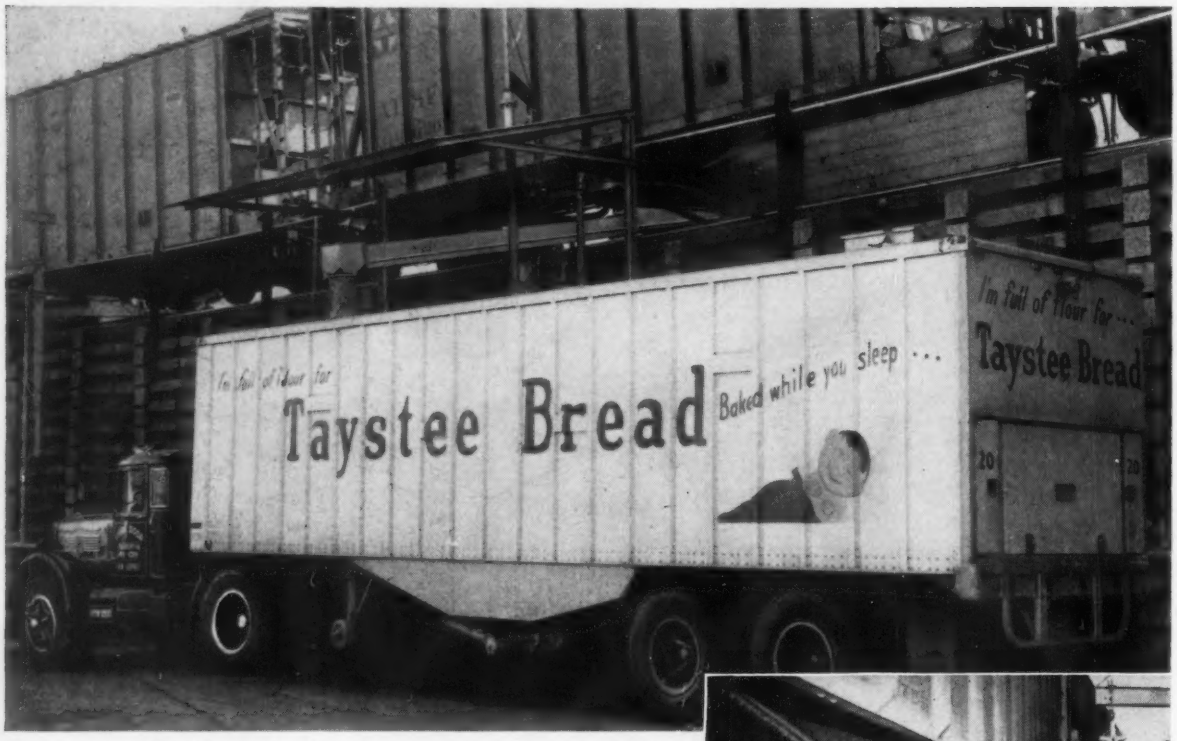
The Arithmetic of Materials Handling



It takes only 15 minutes to hook up this Airslide system. Transfer of material from Airslide car to fill Fruehauf Airslide trailer can be made in as little as 10 minutes.

TRANSFER TIME: 10 MINUTES!

Fuller Airslide Unloads Flour 9 Times Faster

Speed's the thing in this new Airslide® flour-unloading system, developed jointly by Store Door Delivery, Inc. and the Fuller Company. Simple in design, with no moving parts, the system uses air to *fluidize* the flour, then gravity flows it downhill like water.

Result: *the flour moves 9 to 10 times faster than with mechanical unloading methods!*

Bags to Bulk

Bulk delivery is saving 15¢ to 25¢ per hundredweight for commercial bakeries. It's faster, cuts handling costs, eliminates bag costs, reduces loss and contamination of flour. What's more, deliveries can be scheduled more regularly and a good deal more often.

No Overtime

With *Airslide* bulk transfer unit, Store Door can unload two Airslide cars a day—without overtime—an achievement not possible before. Besides time-saving, fast loading prevents product damage by condensation forming on the van interior in cool weather.

Can Airslide Help You?

Highly flexible Fuller Airslides transfer any type of fine, dry materials with speed, safety and economy—without moving parts. Enclosed Airslides are sanitary and self-cleaning. Call on Fuller for assistance with your conveying jobs . . . and send now for complete literature on Fuller pneumatic conveying systems.

"See Chemical Engineering Catalog for details and specifications."

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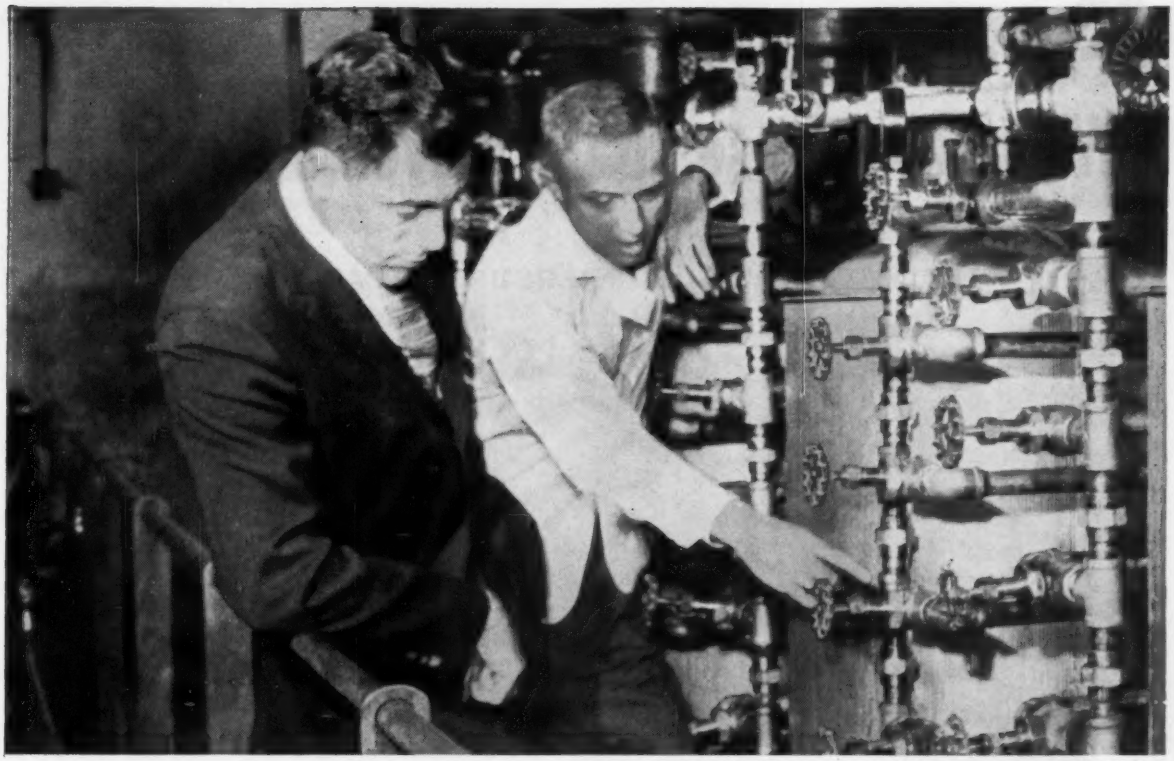


Joseph Smindak (right), Plant Engineer, Coffee Instants, Inc., Flushing, N.Y. Left, Michael De Piano, N.Y. representative, Cooper Alloy Corp. Foreground, Cooper Alloy 1" stainless Union Bonnet Globe Valves.

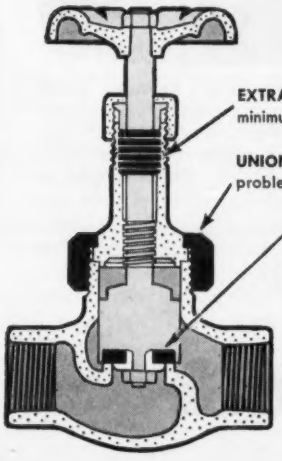
SMINDAK of COFFEE INSTANTS, INC.

Tells why he specifies Cooper Alloy for stainless steel valves and fittings

Q. Mr. Smindak, why does Coffee Instants, one of the nation's leading instant coffee processors, use stainless valves and fittings in processing their product?
A. To protect product purity, a must with us as with most other food processors. Contact with other metals can degrade flavor and aroma; stainless steel does not.

Q. Why Cooper Alloy?
A. Because of the special Cooper Alloy construction features I find combined in no other brand. On these Cooper Alloy union bonnet globe valves, for example, we like the ease of operation and the low maintenance; the fact that it removes a threaded joint from product contact; and in particular, the extra-deep square-compression stuffing box which reduces maintenance, gives a tighter seal at stem. Then too, the excellent service we get from Cooper Alloy sales people and distributors.

Q. You don't find these features in any competing valve?
A. Frankly, not one has them all. That's why, for our stainless valves *and fittings*, we insist on Cooper Alloy.


EXTRA-DEEP STUFFING BOX holds minimum 6 turns Blue African asbestos
UNION BONNET JOINT eliminates problems found in screwed-in bonnets
RETAINED RENEWABLE DISC for tight seal and long life
COOPER ALLOY Figure 15RD Globe Valve, inside screw rising stem, 200-lb. service, screwed ends, renewable retained disc of composition you specify.

YEARS AHEAD IN DESIGN SUPERIORITY! No matter what your valve type—globes, gates, angles, checks, or Y's—the Cooper Alloy model's outstanding design features will be important to you. Cooper Alloy, with 35 years of pioneering experience in stainless steel, does not merely adapt existing brass and iron valve patterns; it creates valves *designed to be cast in stainless!* **Check the special design features of valve shown at left.**

As the little CA man below is saying: "*You Can Tell A Cooper Alloy Valve As Far As You Can See It!*" Write today for *your* copy of our folder "Design Factors In Stainless Steel Valves." The Cooper Alloy distributor near you will be glad to show you the complete line of Cooper Alloy valves *and fittings*, and their advantages. He can serve you promptly from local stocks.

COOPER ALLOY
Corporation • Hillside, New Jersey
VALVE & FITTING DIVISION
THIRTY-FIVE YEARS OF STAINLESS STEEL PIONEERING

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WASHDOWN HOSE

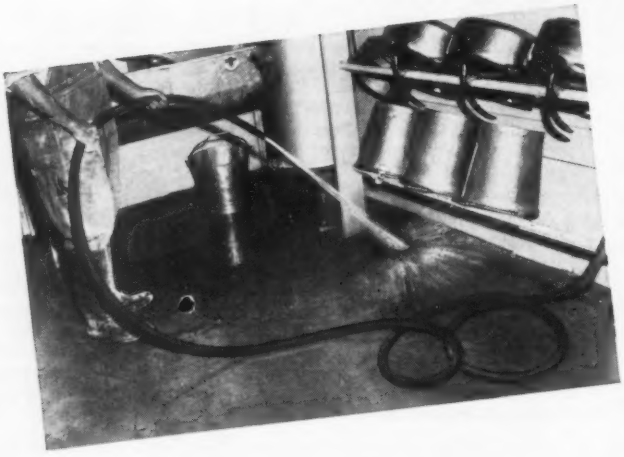
Washdown hose that's never a washout

FOR HOT WATER OR LOW-PRESSURE STEAM

For washing, cleaning and sterilizing equipment, this specially compounded **U. S. RAINBOW® CREAMERY HOSE (STYLE P-255)** has a white, strong and flexible cover, resistant to destructive effects of grease and lactic acid. Nozzle can be built integral to prevent chipping of fragile linings in tanks and sterilizers.

U. S. PACKER'S WASH-UP (STYLE P-7093) is very flexible, but very rugged. Four-ply carcass duck assures easy handling, perfect balance. Cover of black neoprene resists destructive action of animal fats, oils, and abrasion.

FOR COLD OR WARM WATER



U. S. PEERLESS® WATER HOSE (STYLE P-365) has a tube of extruded natural rubber to provide a smooth waterway. Carcass of braided rayon for longer life in high-pressure service. Highest grade brown cover is specially compounded for resilience, resistance to abrasion and other abuse.

This attractively priced hose, **U. S. RAINBOW WATER HOSE (STYLE P-340)**, has a carcass of exceptional strength and flexibility, thanks to two braids of high-twist cabled rayon. Tough rubber cover resists abrasion from dragging or scuffing. Seamless tube of special rubber stock.

"U. S." Hose is available at any of the 28 "U.S." District Sales Offices, at selected distributors, or write us at Rockefeller Center, New York 20, N. Y.

Mechanical Goods Division

United States Rubber

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Dump Box Cuts Damage

Injury to potatoes moving into low-level storage can be reduced to less than 0.2% by using a newly designed 1-ton dump box. This corresponds to 1-8% when bin loaders, conveyors or chutes are used.

The box has three main parts—pallet bottom, container, and grab. Made of 29-gage corrugated steel, container stands 54 in. by 46 in. dia. A conventional double-faced pallet forms the bottom, making it easy to handle and stack. The grab, by which box is maneuvered, consists of a main beam, chain and bar, and holding hooks.

In operating the box, a hoist and track are used to lower it into the bin. Once in position, operator trips a lever and pallet bottom swings aside allowing potatoes to flow out.

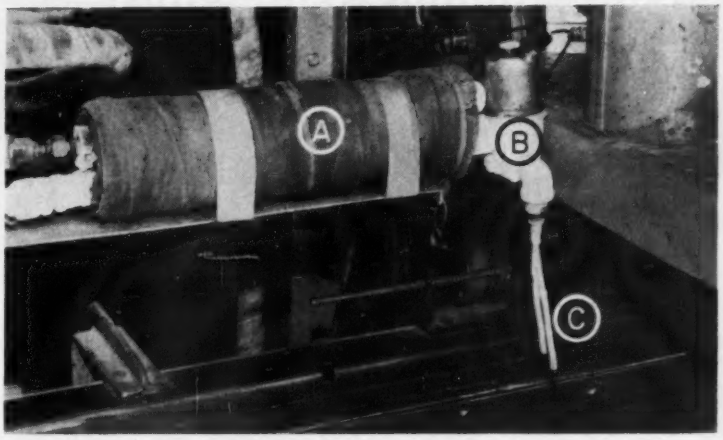
Empty container is then raised and snapped together ready for a refill. Box may be reloaded either in the field or from bulk tracks at the storage.—*Agricultural Marketing*, (USDA, Washington), March, 1958.

Dual Purpose Plastic Tray

This reusable tray, seen with 42 individual servings of coffee cream, is equally suitable for jams, jellies, or condiments. It can be employed for both delivering and serving.

Trays are vacuum-formed from high density polyethylene sheet that resists heat and impact.

Each of the cup holders has a cut-out honeycomb design (left in photo) that is of particular value when tray is used for perishable products. For delivery of cream, seven trays may be stacked in a standard milk crate and packed with alternate layers of crushed ice. As the ice melts, the water drains through the cut outs providing a cooling tower type of refrigeration. —*Vacuum Molding Co., Boonton, N. J.*



Cooler Insures Uniform Gassing

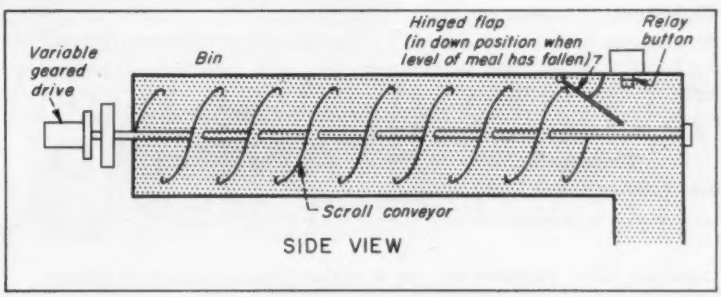
To prevent spoilage of the date pack at California Date Growers Assn., Indio, Calif., a methyl formate-ethylene mixture is added to each package just before it is closed and wrapped.

For safety, the two tanks containing the liquefied gases are stored in closet outside the plant. Temperature of closet is thermostatically controlled at 100F. to maintain pressures in the tanks of 20 psi. and insure a constant supply to dispensing valve on filling line.

At this temperature, however, gas bubbles were formed between the valve and packages resulting in erratic dosages.

To overcome this difficulty, a refrigerated heat-exchanger (A in photo) was built and installed just ahead of dispensing valve (B). This cools the liquid to 30F. and prevents formation of gas in lines (C) that feed 1 cc. portions to each filled carton passing, two-abreast, under them.

Feed is controlled by a dc. electronic timer that actuates a solenoid valve in the dispenser.—*FE Staff.*



Flap and Relay Lick Conveyor Feed Problem

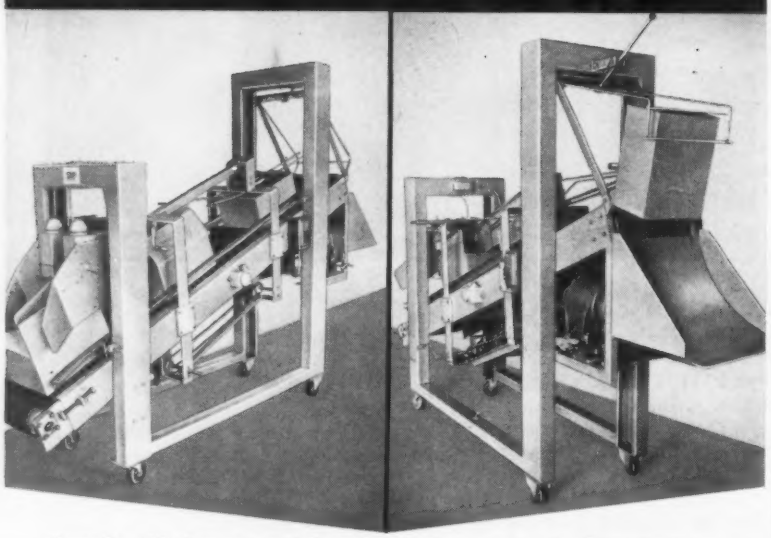
In the continuous mixing operation at our balanced ration plant, different meals are fed from bins to screw conveyors, speed of which are controlled by variable-speed gear boxes.

Due to bridging in the bins, meal is apt to flow too slowly into some of the conveyors and, thus, upset the carefully figured formulas.

To overcome this difficulty, I installed flaps above the respective worms (see sketch). When a conveyor runs full, the flap is held firmly against a relay switch mounted on top of conveyor trough. But when

Portable Sealer requires no Long Compression Unit—

Turns cases upside down to compress glued tops



Operation: Filled cases are delivered to Sealer on conveyor. Cases move up incline on non-slip corrugated grip-top belt. Flaps are automatically tucked in and glued . . . then top flaps are folded down onto glued surfaces. As case reaches top of incline it is turned upside down onto a slide which delivers it to pallet or conveyor.

Another first for Standard Metal Products Co. A revolutionary case sealer that eliminates costly, space-consuming compression units . . . turns filled cases upside down to let the weight of each case compress its own glued top as it is transported on conveyors or stored on pallets.

Completely portable case sealer rolls on heavy duty casters from one case loading operation to another . . . handles a wide range of case sizes up to 16″ wide, 20″ long and 12″ high. Unit is 3′ wide, 9′ long. Weighs approximately 800 lbs.

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STANDARD METAL PRODUCTS CO., 123 N. RACINE AVENUE, CHICAGO 7, ILLINOIS

GENTLEMEN: We are interested in your recommendations in regard to the food processing equipment checked, or described in letter attached:

☐ coolers ☐ exhausters ☐ pasteurizers ☐ accumulating tables
☐ can washers ☐ case-sealers ☐ electronic pickle-perforators

Company_____

By_____ Title_____

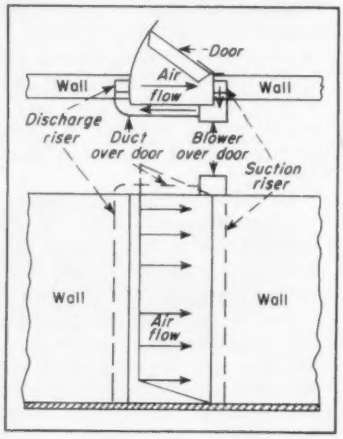
Address_____

City_____ Zone____ State_____

Practical Ideas

level of meal falls, the flap drops away from the relay which immediately actuates the switch.

The switch turns on a light above the conveyor and, also, sounds a buzzer. This alerts the operator to the trouble so he can quickly rectify it without interfering with production.—*R. H. Freedman, Johannesburg, S. Africa.*



Air Curtain Cuts Refrigeration Loss

Preventing loss of cold air from refrigerated rooms when doors are opened is always a difficult problem. But it can be solved by use of an "air curtain", created by a "sheet" of air traveling at high velocity between the door jams.

The system is comprised of a specially designed steel door frame which has air passages in each jam (see sketch), and a good air blower mounted above the doorway.

Suction side of blower (which is as near as possible to the "suction

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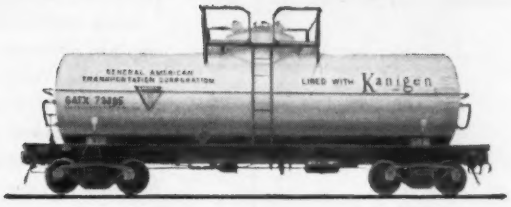
We'll pay $5 to $15 (sometimes even more) for each contributed item used.

Just send us the facts about your idea and its application. And include a free-hand sketch or snapshot to show how it works.

We'll do the finished writing and drawing for you.

Send your idea today, before you forget. Address it to Practical Ideas Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.—The Editors.

THE TANK CAR NEWS OF 1958



GATX cars lined with Kanigen®... new nickel-alloy coating

KANIGEN, a unique patented process, deposits a hard, uniform, corrosion-resistant nickel-alloy coating on tank car interiors . . . lasts four to six times as long as phenolic, epoxy or neoprene linings. You can load at high temperatures that would destroy other linings. For example, 73% caustic soda can be piped in at unlimited temperatures.

Tank cars lined with KANIGEN are also being successfully used for liquids such as tetraethyl lead, ethylene oxide and glucose.

If your product is a liquid, GATX furnishes or can build a tank car to transport it. GATX maintains a nation-wide network of shops for servicing.

No capital investment . . . when you ship GATX.

KANIGEN is a trademark which identifies chemical nickel coating by GENERAL AMERICAN TRANSPORTATION CORPORATION and its licensees, the product resulting therefrom and compositions produced by them for use in chemical nickel coatings.

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PACKAGES
PRODUCED
PERFECTLY
Year... after Year... after Year...
IN our fifty-seven years in the metal packaging industry Heekin has served thousands of customers in every field of merchandising. These satisfied customers are proof that throughout the years hard work and research have produced a perfect metal package . . . plain and lithographed . . . every time. Remember . . . Heekin Personal Service is as close as your telephone.
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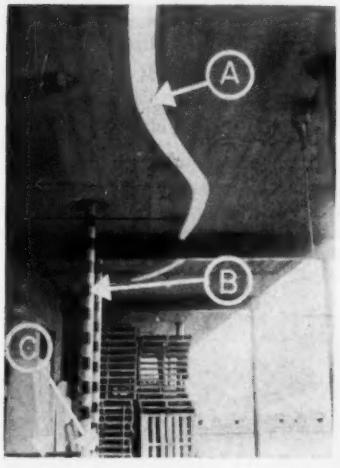
riser") is connected with it. Discharge side connects with other jam (discharge riser) with a sheet metal pipe. Jams are perforated (with openings near floor larger than those higher up) to permit air flow.

Blower is controlled by a jam switch. When door opens, the blower starts, when it closes, blower stops.

In operation, air is forced (by blower) into top of discharge riser and moves at high velocity through the perforations in the jam into door opening. At the same time, blower creates a vacuum in the suction riser, thus pulling air through perforation in its jam. Result is an air curtain produced by movement of the air discharged from one jam across the opening and into the other.

Size of risers depends on wall thickness, but one 10-in. square would be ideal.—*Patrick G. Quinn, Ottumwa, Iowa.*



Two Safety Measures Cut Traffic Hazards

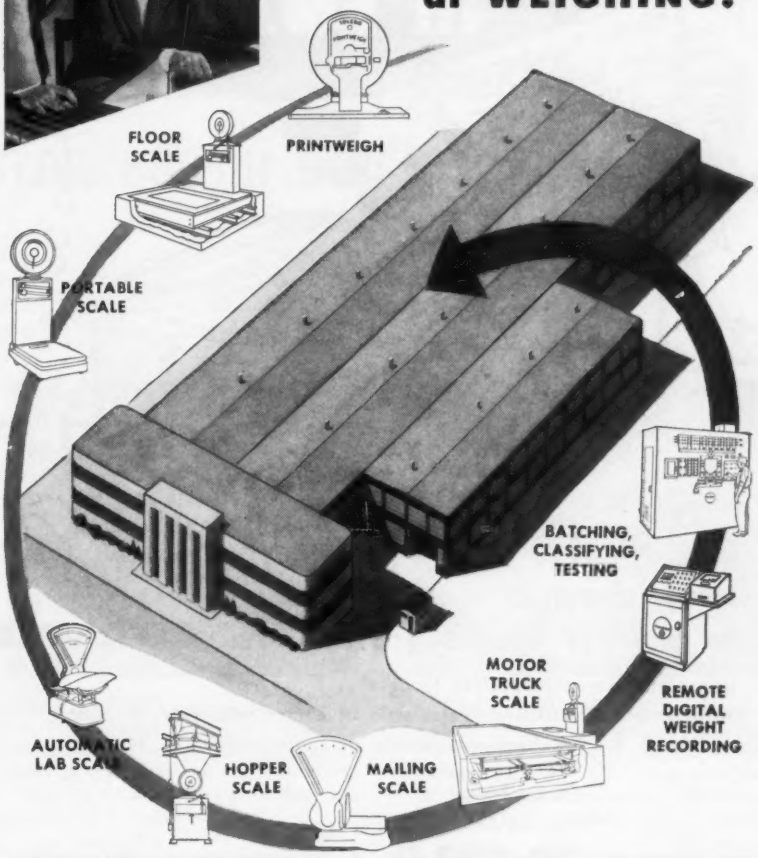
There's heavy, dangerous traffic on one of our docks, where pallet loads of supplies are hauled by fork-lift trucks from one building to another. The fork-truck operators had difficulty maneuvering from the dock through shipping-room door.

Painting a 4-in. wide yellow strip on dock ceiling (A in photo) proved to be the solution. Looking up at it, operator is easily guided along dock and through the door.

Another problem concerned employees existing from a shipping-room door onto the dock. Here, they were apt to be run into by one of the fork lifts. To safeguard against

Studying Costs? It pays to start with a

Plant-Wide Look at WEIGHING!



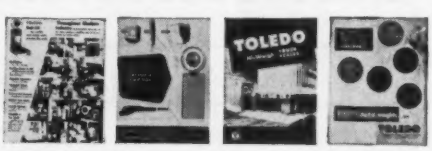
You can lessen the impact of rising costs by making sure your scales are doing the best possible job. Remember that weighing today is not a job for isolated scales—it's a vital element in your overall cost control system.

Weight records directly affect costs, quality, inventory control and customer billing. Weighing errors, or inadequate weight data, can be avoided by having the right scales in the right places . . . all carefully integrated in a plant-wide weighing system to supply basic records on materials received, shipped or transferred. Check your needs now! TOLEDO SCALE, Div. of Toledo Scale Corp., 1404 Telegraph Road, Toledo 13, Ohio.

TOLEDO SCALE *Headquarters for Weighing Systems*

DIVISION OF TOLEDO SCALE CORPORATION

☐ **NEW TOLEDO WEIGHT FACT KIT** will help you determine how well your scales measure up as a weighing system—help you detect weighing losses that drain profits. Request your kit now. No obligation.



☐ Industrial Scale Line ☐ Electronic Load Cell Scales ☐ Motor Truck Scales ☐ Electronic Remote Digital Weights

☑ WE'LL BE GLAD TO MAIL THE LITERATURE YOU CHECK.

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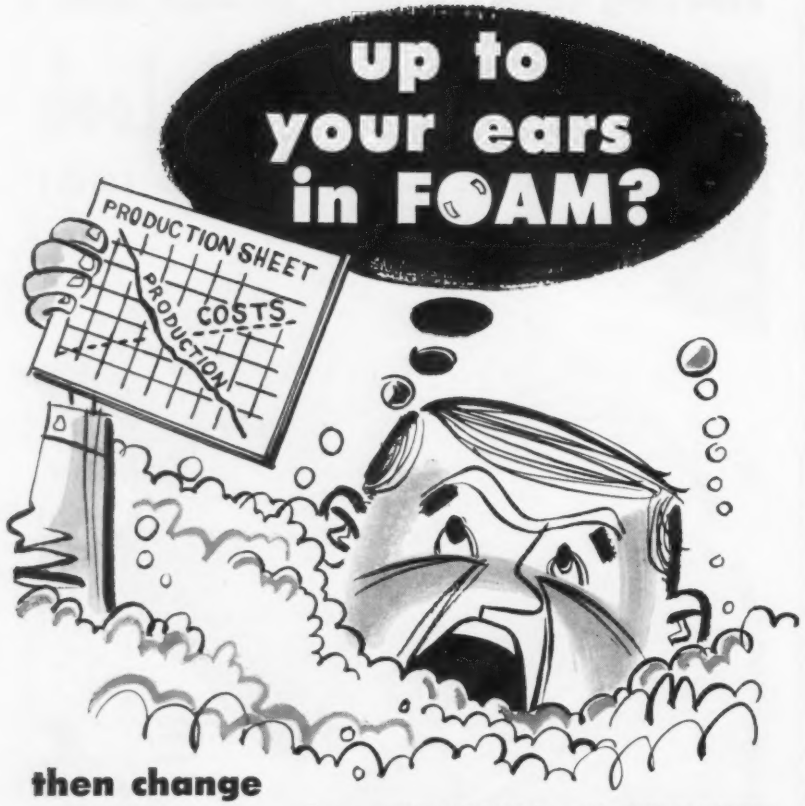


then change to a Dow Corning SILICONE DEFOAMER

In processing nonstandardized foods—
Antifoam A Compound—permissible at concentrations to 10 ppm.
Antifoam AF Emulsion—permissible at concentrations to 34 ppm.

Examples—
1 ounce Antifoam A kills foam in—
20,833 lb chewing gum base

1 ounce Antifoam AF kills foam in—
15,625 lb dill pickling solution

FREE SAMPLE
Make your own test. Use coupon below or write on your letterhead to receive a trial sample. No obligation, of course.

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

355

NAME

TITLE

COMPANY

CITY ZONE STATE

My foamer is

Oil system

Aqueous system

Other

Practical Ideas

this hazard, we installed two 3-in. pipes, a distance of 3½ ft. from the door and secured to dock floor and ceiling (B in photo). These posts are code-painted with yellow and black strips. For further safety two 2-in. horizontal guard pipes (C) were attached to these posts.—*Henry Maas, Maintenance & Engineering Superintendent, Rochester Dairy Co-operative, Rochester, Minn.*

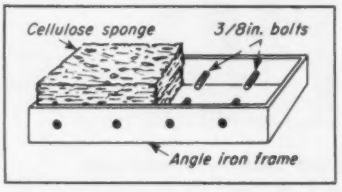
Punch Cards on Machines Keep Oilers on the Job

A system employed succesfully in an airplane plant to insure regular lubrication of equipment should find many applications in food plants.

At Lockheed Aircraft Corp.'s Burbank, Calif. facility, punch cards are attached to major pieces of equipment and machine tools. These are punched daily as oilers make their rounds.

Printed on the face of each 5x8-in. card is a 12-month calendar plus description and location of the machine concerned. Each card is plasticized so it will stand up for a full year.

Use of the cards places oiler's job performance in full view for anyone to check. This improves performance with minimum supervision. Formal check on cards is made once a week.



Applying Egg Wash to Rolls

Cellulose sponges mounted on the cutter mechanism of a roll table are excellent for applying egg wash. They save labor, and improve sanitation by eliminating the possibility of brush bristles getting on the rolls.

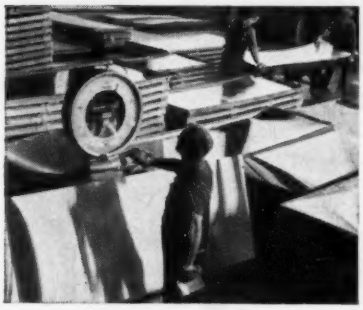
A suitable arrangement for holding two sponges is a rectangular angle iron frame with eight ⅜x1½-in. bolts (see illustration). Sponges are compressed and placed between the bolts. When pressure is released they expand and are held firmly in place.

As previously mentioned, this frame is mounted on the cutting mechanism so that the sponges wipe

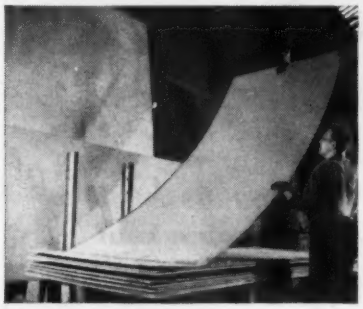
2351

types, shapes, sizes and finishes of Allegheny stainless in stock at Ryerson

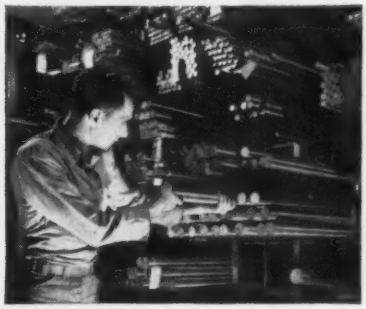
When you want stainless fast . . . anything from one to 2351 types, shapes, sizes and finishes . . . telephone Ryerson. You can depend on accurate processing and quick shipment from Ryerson . . . the nation's oldest supplier of stainless from stock.



STAINLESS SHEETS—Eleven analyses of Allegheny stainless sheets, including nickel and straight chrome types. Extra wide sizes, also, to reduce welding costs. Expanded and perforated sheets.

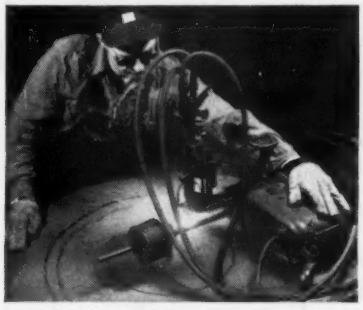


STAINLESS PLATES—Nine analyses, including plates to Atomic Energy Commission requirements and to ASTM specifications for code work. Also extra low carbon types for trouble-free welding.

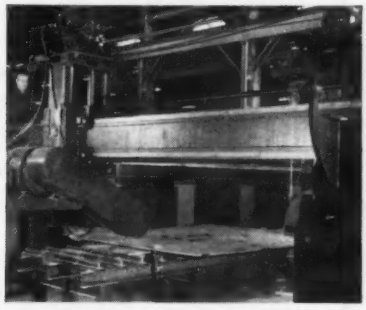


STAINLESS BARS AND ANGLES — Eight types, including rounds, squares, flats, hexagons and angles. Free-machining bars with both analysis and mechanical properties controlled for best performance.

STAINLESS PIPE AND TUBING—Light wall, standard and extra heavy pipe, ornamental and regular stainless tubing. Also screwed and welding fittings and Cooper stainless valves.



STAINLESS CIRCLES, RINGS, SPECIAL SHAPES—No matter how intricate, we can flame-cut practically any shape from stainless steel plate. One piece or a thousand.



TRUE-SQUARE ABRASIVE CUTTING—Stainless plates up to 12′ x 25′ cut absolutely square on abrasive disc machine. Length and width tolerance plus or minus 1/32″.

RYERSON CERTIFIED QUALITY

RYERSON STEEL

Member of the INLAND Steel Family

Principal products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing—aluminum, industrial plastics, metalworking machinery, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND DETROIT • PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

For more data, circle this page number on card at back →

WATERPROOF
and Plenty TOUGH!

200 SIZES
35 WIDTHS
7 THICKNESSES

For Sorting and Washing Vegetables you can't beat

BUFFALO'S R F & C

R F & C stands for Rubber Filled and Covered and that's exactly how this favorite of the food packing industry was created. We took our basic Solid-Woven Cotton Belt and saturated in with rubber. Then we added a tough rubber overcoat to produce the perfect LONGER LASTING belt for fruit and vegetable washing and sorting. Highly resistant to abrasion and abuse this TOUGHER completely WATERPROOF belt, which is flexible to —50° F., has long been the NUMBER ONE CHOICE of packers everywhere.

We also supply acid, grease, water and heat resistant LATEX COATED belting as well as many other styles. Get the facts on our whole money saving line.
Ask your Mill Supply Man.

WRITE for 14 page booklet that fully illustrates and describes our belts, their sizes, prices and uses.

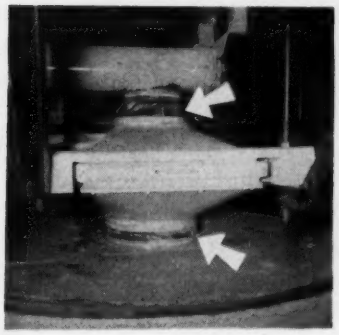
BUFFALO WEAVING & BELTING CO., INC.
206 CHANDLER STREET BUFFALO 7, NEW YORK

NEW YORK PHILADELPHIA CHICAGO DETROIT PASADENA

● *We also manufacture a complete line of WEBBINGS and PURE SHEET RUBBER*

each roll. Wash is fed from a container fastened above the cutter housing.

Container may consist of a section of 5-in. stainless pipe that holds about ½-gal. Pipe is reduced to ½-in. and fitted with a stainless valve, a short piece of ½-in. pipe that connects with a cross pipe. Latter is drilled to allow the wash to drip directly on the sponges. Flow is regulated by the valve.—*Proceedings 33rd Annual Meeting, Amer. Soc. Bakery Eng.*



Poly Sleeves Up Sanitation

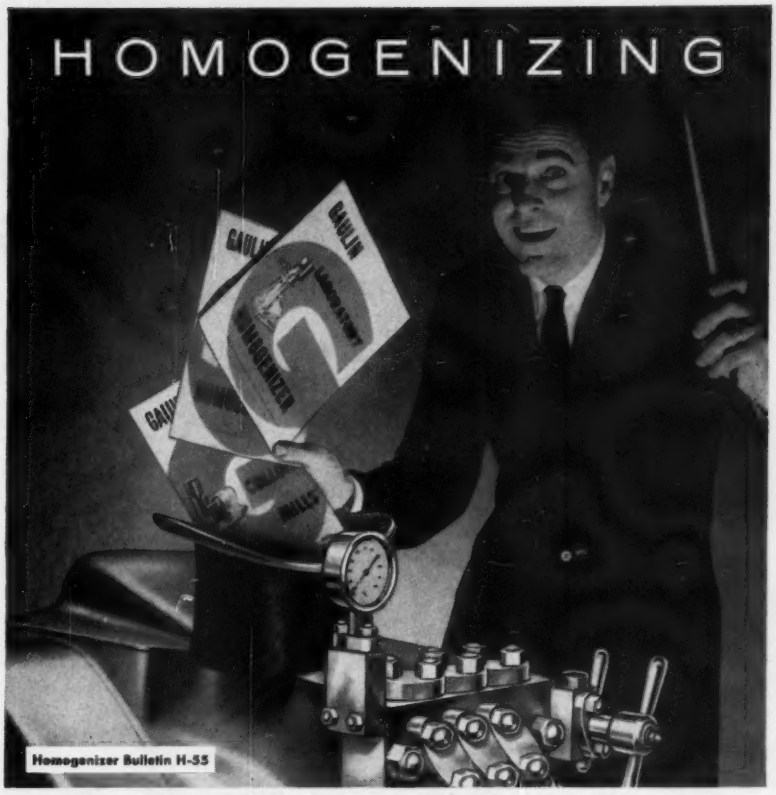
Substitution of polyethylene for cloth as flexible sleeves in our flour handling system has greatly improved sanitation and plant appearance.

Previously we used either cotton duck or nylon material for the flexible sleeves that connect flour elevator discharge spouts to sifter inlets, and sifter discharge spouts to weigh hoppers.

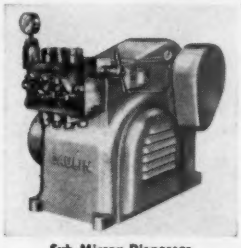
However, these materials presented sanitation problems. They were difficult to clean, and results were not always satisfactory.

Recently it was suggested that we try plastic sleeves. So we had a local seat cover manufacturer make up several to our specifications. He used the clear plastic currently in vogue for automobile seat covers. We fastened them to the spouts with elastic cord (arrows).

The improvement was immediately apparent. Plastic sleeves remain neat in appearance, and are easily cleaned by wiping with a damp cloth. No product leakage occurs, and no infestation problem is present since flour does not cling to the plastic. Also, the cost is moderate—$1.50 per sleeve.—*Charles E. Foster, Golden Flake Baking Co., Cambridge, Mass.*

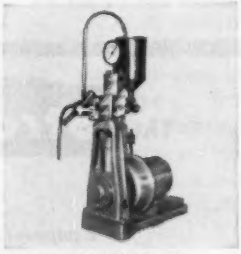


FREE. *Send for the G.T.A. Library of Product Information* G.T.A. . . . Means Gaulin Technical Assistance — best source on how to mix or move your product.



Sub-Micron Disperser Bulletin SMD-55

Colloid Mill Bulletin C-57



Laboratory Homogenizer Bulletin LH-55

New Tricks for old blends with Gaulin "PARTICLE CONTROL"

Get the jump on costs and quality! See what a Gaulin Homogenizer or Colloid Mill can do for you . . .

- Flavor Emulsions: Smaller particle size, longer shelf life.
- Juices: Controlled texture and viscosity.
- Soups and Gravies: Makes product stable to freezing or steam sterilization.
- Baby Foods: Right particle size for small stomachs.
- Syrups: For smoothness, flavor and texture.

Plus . . . superior dispersing and emulsifying for a great variety of food processing applications.

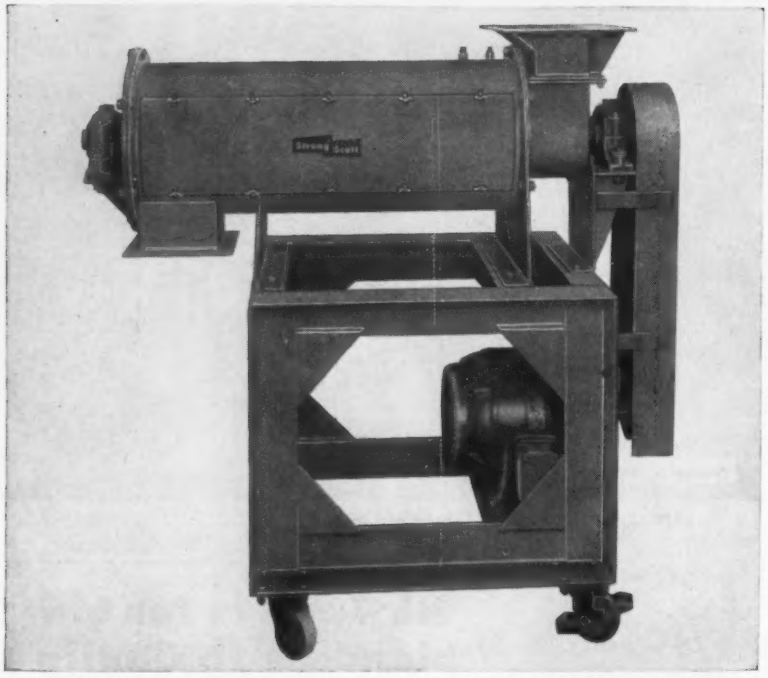
Try Homogenizing your product. Send a sample or rent Laboratory Homogenizer for only $75.00 a month. Gaulin Technical Assistance will help you bring new cost-saving solutions to processing operations.

Gaulin TRADE MARK
MANTON Gaulin MANUFACTURING CO. INC. EVERETT, MASS.

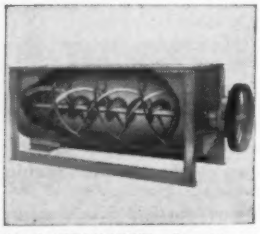
73 Garden Street, Everett 49, Mass.
World's largest manufacturer of stainless steel reciprocating, rotary, pressure exchange pumps, dispersers, homogenizers and colloid mills

NEW PRODUCT NEWS

NEW HIGH SPEED MIXER FOR QUALITY FINISHING

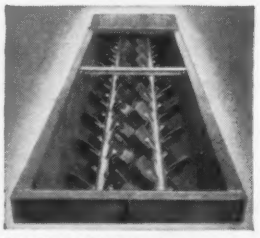


The Turbulizer produces a homogeneous mix, increases production while reducing mixing time and costs.



TRIPLE ACTION MIXER—Complete uniform blending in 2 to 7 minutes.

STRONG-SCOTT TRIPLE ACTION MIXER exposes each particle in the mixture to over 10,000 separate mixing actions per minute as it blends and folds. This produces a uniformly mixed product with 99.9% thorough distribution of minor additives.



TWIN ROTOR MIXERS—Accurate blending of liquids and dry mix at any speed.

TWIN ROTOR MIXERS are designed primarily for high percentages of liquid application to light weight ingredients, where product identity is to be maintained. A double shaft assembly with overlapping, adjustable paddles gently combine the liquids with the dry mix.

STRONG-SCOTT TURBULIZER

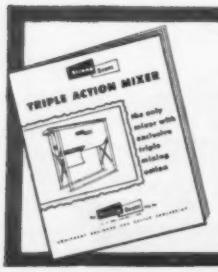
Provides Fast, Thorough Dispersion, Disintegration and Blending of Dry Materials, or Pastes Involving Liquids and Solids.

The TURBULIZER is a high speed, continuous mixer that will disintegrate and disperse fat pellets, chemical ingredients which have a tendency to ball or agglomerate, and other ingredients which can be broken by the paddles and thoroughly dispersed in the mixture. Product uniformity is accurately maintained as a result of high speed centrifugal forces created by the paddles.

It is also highly applicable where a fluffing action is desired on powdered material. Minor percentages of liquid may easily be added to dry mix with high efficiency and dispersion results.

The TURBULIZER is self cleaning and is built with sanitary seals at each end of the shaft. The interior is precision machined. Overlapping, adjustable paddles turn within a close tolerance to the chamber wall, providing a selective rate of material flow.

The TURBULIZER may be furnished in carbon or stainless steel and may be jacketed for hot water, steam or a refrigerant. Capacities will vary depending on the bulk density of the material and the degree of agglomerates encountered. Consult Strong-Scott for full details.



WRITE FOR FREE COLOR BULLETIN

For complete information on the equipment shown above, write to The Strong-Scott Mfg. Co.

The Strong Scott Mfg. Co.

DEPT. FE-58

Equipment Designed for Better Processing

451 TAFT STREET, MINNEAPOLIS 13, MINNESOTA

The Importance of STRATEGIC LOCATION

Before attempting to reach their goal, high-altitude mountain climbers set up a series of intermediate camps along a carefully preselected route. These supply depots serve as "steps" for the final assault on the summit.

With modern plants established in three major market areas, Metro, too, has long realized the advantages of strategic location. From these plants it serves packers of soluble coffee, jams and jellies . . . brewers, vintners and distillers . . . bottlers of household chemicals and other diversified products. Each of these customers has found that efficient, flexible METROmatic service assures a quality product, delivered on an unfailing schedule ideally suited to his production requirements.

METRO GLASS COMPANY, INC.

MANUFACTURERS OF QUALITY GLASS CONTAINERS

WASHINGTON, PA. JERSEY CITY, NEW JERSEY CHICAGO, ILL.

Nutrition-Conscious Customers Buy Fortified Products

You gain an edge over competition, create excitement *and* sales by fortifying with Merck Vitamins and Amino Acids. Almost any processed food is a candidate for fortification, and you can choose from nearly a dozen Merck Nutrients—all easily adaptable to normal food processing operations.

You'll find unlimited possibilities for developing new products by adding extra nutrients—not just those for which the Government has set Minimum Daily Requirements (Vitamins A, D, B_1, B_2, Niacin), but other essential nutrients like Vitamin B_{12}, Lysine, and Vitamin B_6—each loaded with consumer glamour.

Merck can supply you with all these nutrients—and top-notch technical service to boot. Just call in your Merck representative or write directly to Rahway for the details.

MERCK & CO., INC.
RAHWAY, NEW JERSEY

© Merck & Co., Inc

DRYNESS

best reason in the world for specifying

genetron®

SUPER-DRY REFRIGERANTS

In "Genetron" Super-Dry Refrigerants, moisture has been reduced almost to the vanishing point. "Genetron" 12, for example, has less than one-thousandth of one per cent of moisture! And the tight quality "specs" for "Genetrons" are usually *bettered* in production. "Genetron" Super-Dry Refrigerants are available from wholesalers everywhere. So be sure to make your next order—"*Genetron.*"

QUICK FACTS on GENETRON Super-Dry Refrigerants

- Guaranteed exceptionally low moisture content.
- Noncorrosive to standard equipment materials, nontoxic, nonflammable, stable, safe.
- Critical and freezing points well outside range of operating uses.
- Solvent action on oil helps prevent solidification or congealing of lubricant; aids in lubrication of equipment; generally miscible with oil.
- Freely interchangeable and may be mixed in any proportions with comparable fluorinated hydrocarbons meeting the same strict refrigerant specifications.
- Available everywhere, from refrigeration wholesalers throughout the country.

GENETRON 11 ORANGE LABEL CCl_3F
Trichloromonofluoromethane

GENETRON 12 WHITE LABEL CCl_2F_2
Dichlorodifluoromethane

GENETRON 22 GREEN LABEL $CHClF_2$
Monochlorodifluoromethane

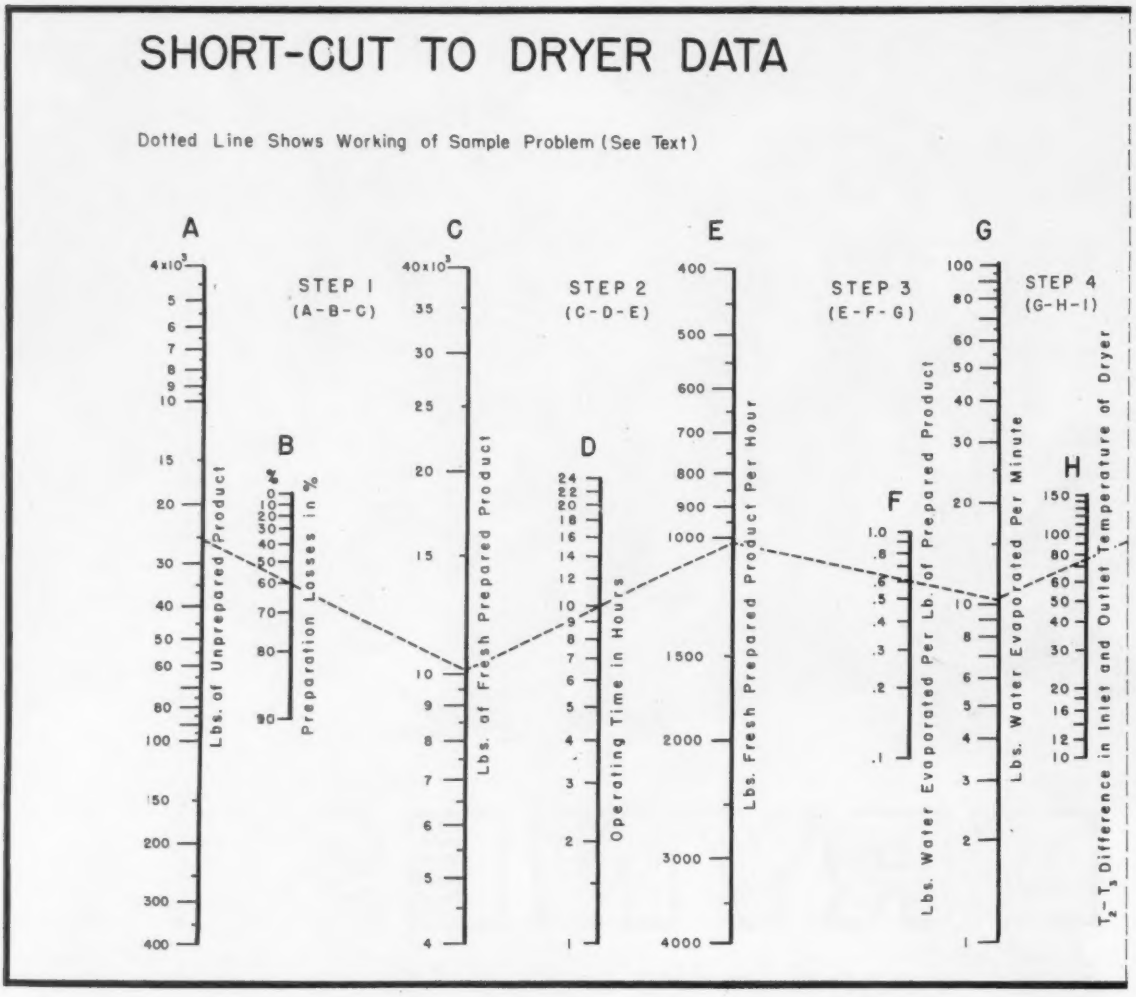
GENETRON 113 PURPLE LABEL $C_2Cl_3F_3$
Trichlorotrifluoroethane

GENETRON 114a BLUE LABEL $C_2Cl_2F_4$
Dichlorotetrafluoroethane

Allied Chemical

GENERAL CHEMICAL DIVISION

40 Rector Street, New York 6, N.Y.



Here's Chart for Fast Figuring of

Easy-to-use, it helps get most out of your unit. Simplifies and paper method of computing production capacity.

DO YOU WANT quick answers on just how your continuous or batch-type dryer will handle various products? Or working factors on how materials of different moisture levels can be dehydrated to desired final moisture content?

If so, you'll find this handy nomograph a great saver of mental energy and valuable time–for it neatly short-cuts the old tedious pencil

RAYMOND R. HAUGH

Chief Applications Engineer, Quartermaster Food & Container Institute for the Armed Forces, Chicago

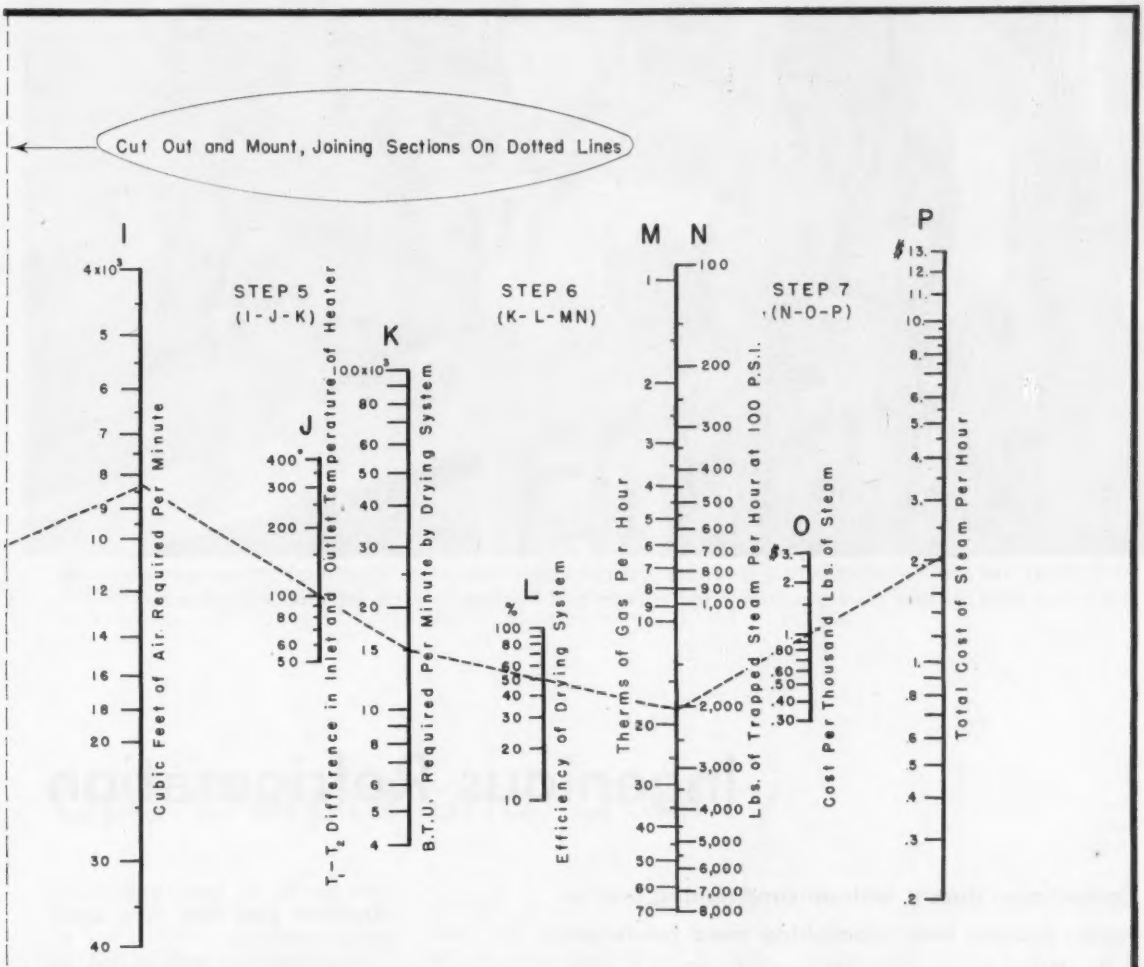
To illustrate its operation, let's assume we have 25,500 lb. of unprepared product containing 36% solids. This is to be dried to 90% solids in a batch or continuous air dehydrator in a period of 10 hr.

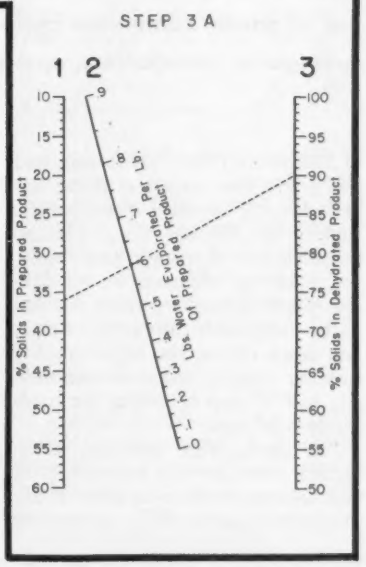
Step 1: Starting at Scale A (left of large chart), draw a straight line from pounds of unprepared product (25,500) through 60% on Scale B (preparation losses) to Scale C. There, amount of fresh prepared product is indicated at the point of intersection–10,200 lb.

Step 2: Join above point on Scale C to 10 on Scale D (operating time, hours) with a similar line. Extension of this line to Scale E gives pounds of freshly prepared product per hour –1,020 lb.

Step 3: Refer now to small chart at lower right and draw line from 36 on Scale 1 (percent solids in prepared product) to 90 on Scale 3 (percent solids in dehydrated product). Point of intersection with Scale 2 designates pounds of water to be evaporated for each pound of prepared product–that is, 0.6 lb. This scale is identical with Scale F on large chart.

So returning to the big chart you





Air-Dryer Performance

scheduling, also design of new systems

draw a straight line from 1,020 on Scale E through 0.6 on Scale F and carry on to Scale G. Here, point of intersection gives pounds of water to be evaporated per minute—10.2.

Step 4: Join 10.2 on Scale G with 75 on Scale H (difference in inlet and outlet temperatures of dryer). Extension of this line to Scale I gives air required per minute—8,300 cu. ft.

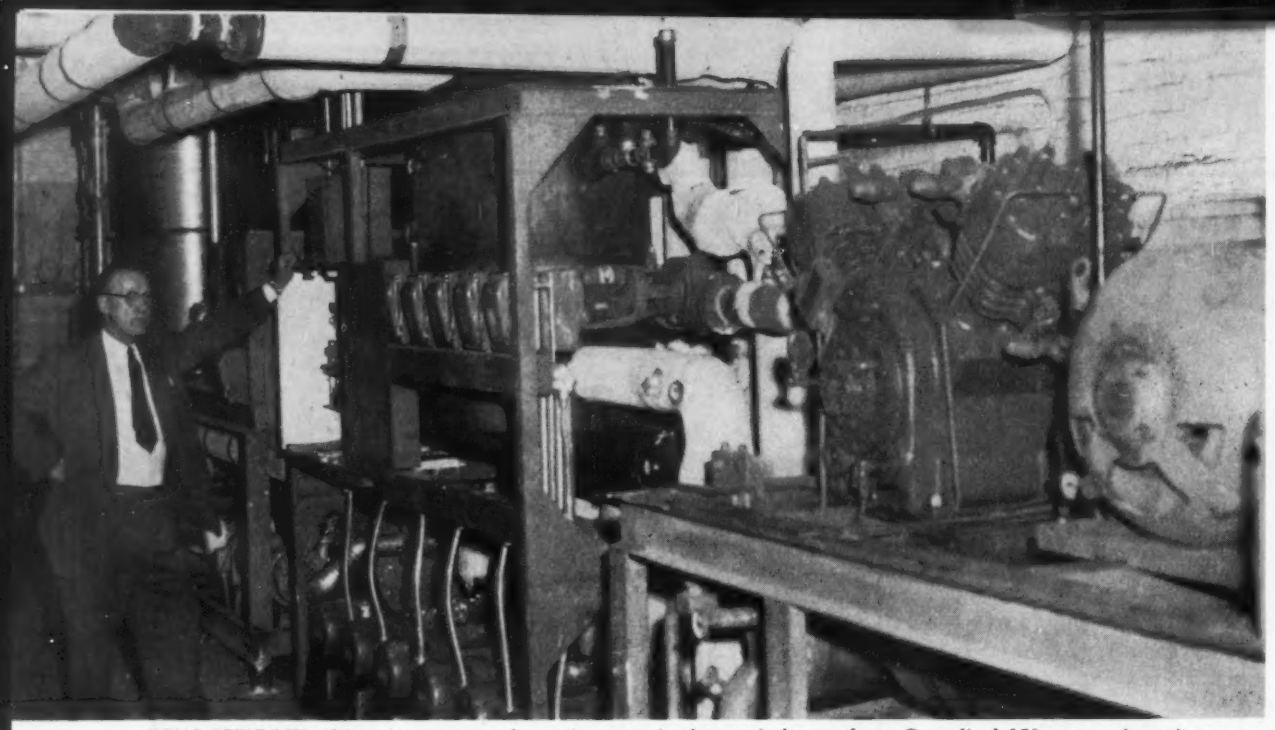
Step 5: Place straight edge on Scales I and J (difference in inlet and outlet temperatures of heater, 100 deg.). Heat required per min. is thus revealed on Scale K as 15,000 Btu.

Step 6: Link above figure on Scale K through 50 on Scale L (efficiency of drying system, percent) to Scale M, where therms of gas required is found to be 18 per hour. Where 100 psi. steam is used for heating the air, amount trapped per hr. (2,020) is given on Scale N.

Step 7: Draw line through above point on Scale N and $1 on Scale O (cost per 1,000 lb. steam) to Scale P. Point of intersection here represents cost of steam for heating—$2.02 per hr.

To get cost of gas, multiply number of therms (Scale M) by unit cost per therm. —*End*

Above chart copyright by R. R. Haugh



DUAL-PURPOSE refrigeration system cools certain zones, simultaneously heats others. Centralized 150-ton-capacity unit uses product heat when operating at low humidities. This eliminates need for reheat coils, cuts refrigeration requirements.

Ingenious Refrigeration

Confectioner does it with air-conditioning that recovers product heat, abolishing need for reheat coils. Other gains: Simultaneous heating or cooling of zones; continuous cycle control; and solid savings in installation, operation, maintenance

T. MILLER
President, Admiral Engineering Co., Chicago

"CHICAGO WEATHER really had our production on a frustrating 'up and down,'" recalled President R. Picken of Peerless Co., Chicago manufacturer of quality hard candy.

"It was up whenever we ran into low winter humidity, which enabled us to accumulate inventory. But it was down during the high-humidity summer months, when we occasionally had to stop operating the hard-candy machines.

"In short, high humidity often spelled the difference between good and poor production—or none at all. Humidities above 45% made the candies sticky. Forming and wrapping units tended to 'gum up', valuable production time was lost, and some product had to be scrapped.

"But all this is past," he added, "now that we've installed a 150-ton-capacity packaged refrigeration system using both chilled and hot water for cooling and/or heating (Hydromation, Admiral Engineering Co.). This system provides the temperature and humidity conditions required to keep our plant operating year 'round. It turns out greater volume—without rejects."

As for operating efficiency, Mr. Picken reports a 9% boost in annual volume. Particularly significant is the 35 to 50% rise in production during the humid summer days. Scrap has been cut to the bone, while candy shape and gloss have been significantly improved.

Production has been leveled off, and some candies no longer have to be warehoused and subsequently rehandled to meet seasonal peak demands.

Furthermore, employees now enjoy ideal working conditions.

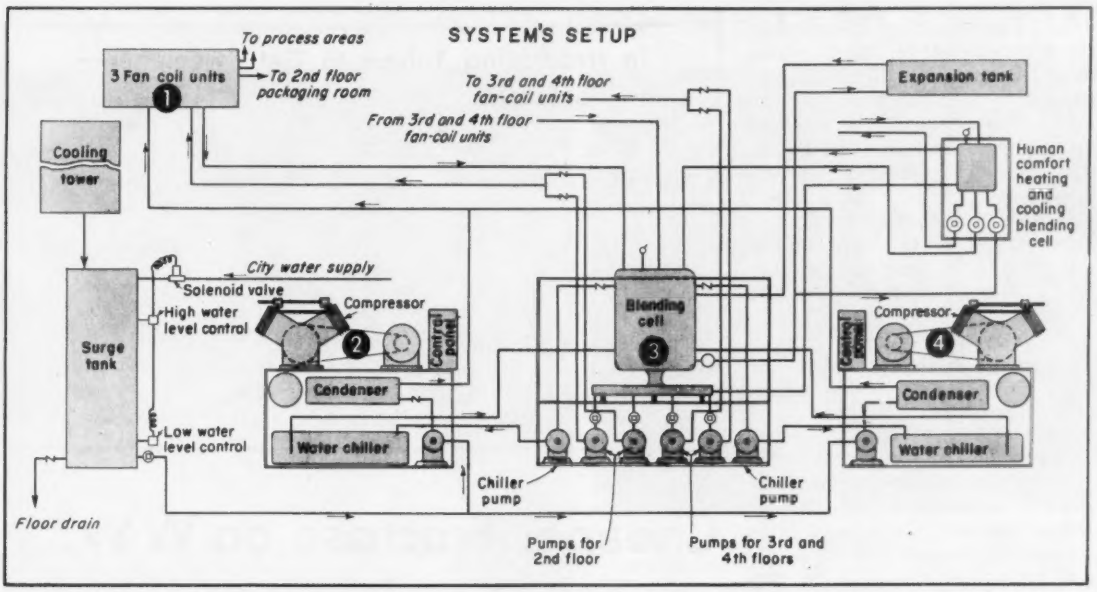
No Reheat Coils

Outstanding advantage of the new refrigeration system is recovery of heat from 200F. candy. This serves to hold room temperature at 75-85F. when operating at humidities of 50% or less.

It's done without use of reheat coils, which require hot-water or steam piping. Saved, too, are the costs of heating and refrigerating. Some 15% more refrigeration would be required if reheat coils were used.

Here's how the system supplies hot water for area heating:

It is tied into an industrial-type, oil-fired boiler by a 3-in. supply pipe and 3-in. return (no need for special fittings). A ¾-hp. boiler-injection



MECHANICS of multi-zone conditioning. Key system components: (1) Fan-coil units that distribute tempered air to process and packaging areas; (2) and (4) water chillers (third chiller not shown), and (3) blending cell.

Ups Output and Quality

pump feeds water from supply pipe to boiler, and hot water is returned (3-in. line) to a blending cell.

Candy from which heat is recovered is at 200F. at the forming machines, having come directly from cooking kettles. Heat is picked up by an air stream and transferred to a fan-coil unit. Here, it is automatically proportioned (according to dry and wet-bulb requirements) with incoming outside air by a damper arrangement.

More Cost Cutting

Note these other gains in the refrigeration system itself:

. . . **Low horsepower requirement.** Takes only 12 hp. for pumping 40 to 45F. water at 450 gpm. If reheat coils were employed, an additional 6 hp. would be needed for complete water circulation, along with duplicate piping—3-in. on hot side and 3- and 4-in. on the cold. System cools and heats with the same 3- and 4-in. pipe mains, while candy heat does the reheating.

. . . **7-day, pre-set time control.** Cooling cycle for office areas is automatically turned on before business hours and off after closing time. In heating, room temperature is raised to normal before the work period, and automatically returned to 55F. after office hours. This saves considerable fuel and power.

Factory operations are in two zones for the normal 8-hr. shift and in a 3rd area for a 16-hr. period. Here again, each zone's cooling or heating is automatically provided in advance of startup and discontinued at end of work period, room temperature returning to 55F.

For non-work periods, system automatically remains on 'off'-cooling or 'low'-heat cycles. For emergencies, such as overtime work, there is a manual switch for each zone. It maintains desired temperature as long as necessary, then is turned to 'off' to return the zone to automatic cycling.

. . . **No controls.** System operates without 3-way or modulating valves, or low-voltage electronic controls. This makes it less expensive and troublesome to install and service. Temperature and humidity are controlled by face and by-pass dampers.

. . . **Less cooling-tower maintenance.** Water and sediment are drained into an 800-gal. stainless-steel surge tank. It has a flushing device that obviates cleaning of tower storage pans. Also included are high- and low-level controls, and water-supply solenoid. The pipes don't freeze because tower is dry when not in operation.

. . . **Load Flexibility.** Three 50-ton units supply a common blending cell that feeds pumps of six air-handling systems for process and comfort cooling. In furnishing simultaneous heating and cooling, machines operate sequentially with respect to load requirements.

Do Double Duty

Process areas serviced include two for candy-forming and quality-inspection stations, and one for candy wrapping and packaging. Refrigeration units and pumps do double duty so that the system continues to operate even if one machine breaks down. If, for example, one of the 2-hp. dual pumps fails, only 25% of pump capacity is lost.

. . . **Easy servicing.** Compressors are mounted aloft for speedy repairs or replacement. Moreover, liquid refrigerant (Freon-12) does not run into compressor on 'off' or operating cycles in event of failure of refrigeration controls or compressor 'smash-ups.'

Refrigeration units are enclosed in heavy steel-channel framing to permit easy handling by machinery movers. This saved on installation cost.

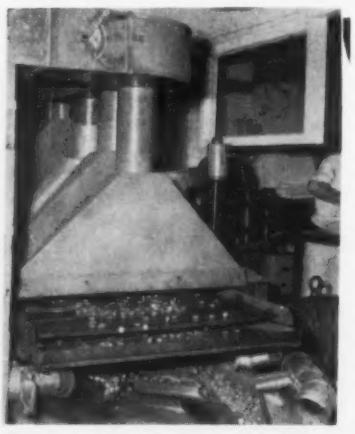
Now for operating details:

System in Action

During summer months, sufficient outside air is supplied to the system to maintain candy-forming areas at a slight positive pressure. Between 15 and 25% of this air is used for maintaining pressure, the balance being recirculated through water-chill coils and bypass dampers at 15,000 cfm. for each of three fan-coil units. About 75% of recirculated air is for processing, the remainder for comfort.

Chilled water is supplied from the blending cell to each fan-coil unit by dual-zone, 2-hp. pumps operating at 150 gpm. The cell serves as distribution point for refrigerated water as well as start and termination point for the chillers.

Three cooling-tower pumps (3-hp. each) take water from surge tank and discharge it through shell-and-tube exchangers. It is then delivered through a common header to three roof-top cooling towers, and gravity-returned to the surge tank. Chiller pumps take suction from blending cell for discharge into refrigeration chillers and return to blending cell.



COOL, DRY AIR supplied to hard-candy formers speeds production, abolishes rejects. Annual output is up 9%.

In Irradiating Tubers to Get Sweetener—

Boosting the Dose . . . . . Ups the Yield

Rep. (millions)	% Solids	% Inulin	% Pectins	% Fructose
0	20.12	6.50	1.59	0.20
1	19.67	4.82	1.56	0.41
2	19.24	4.06	1.34	1.19
4	19.00	3.90	0.93	2.33
8	19.95	3.43	1.01	2.76
10	19.70	3.74	0.93	3.17
20	20.22	2.29	0.81	4.12
40	19.85	3.08	0.94	4.35
60	19.48	1.89	0.73	4.70

Cheaper Fructose on Way?

Gamma rays can convert inulin to this sugar, nearly twice as sweet as sucrose. Plentiful Jerusalem artichoke tubers are promising raw material for getting lower-cost production

ECONOMICAL production of fructose—long beyond commercial reach due to excessive cost—may now be 'unlocked' by gamma radiation.

For our research indicates that these rays can produce considerable fructose from inulin by partial hydrolysis, followed by treatment with hot dilute acid for quickly completing the conversion.

Bringing such a process into reasonable cost range would provide farmers with another cash crop and processors with a new raw material.

Inulin is the polysaccharide of the Jerusalem artichoke tuber, which grows prolifically as a weed even on marginal land. However, it has no food value because there is no inulinase enzyme in the human digestive tract to hydrolyze inulin of the tuber (*Hilianthus tuberosus L.*) to fructose.

Therefore, we were particularly concerned with chemical changes brought about by irradiating the tubers. Details and results of our studies follow:

Tubers were sealed in No. 10 cans, each labeled with the ray dosage to be given. Cans were sent under refrigeration (5C.) to the National Reactor Testing Station, Arco, Ida.

Radiation was from waste fuel rods, which were exposed in a canal of about 18 ft. of water. Rods were placed under columnar racks, and cans were set on these racks. Irradiation rate was 1×10^6 rep./hr. at 25C., tubers receiving various doses (see accompanying table).

Following irradiation, it was noted that product softness increased with radiation dose, attributable to degradation of pectin.

Color of the epidermis was also changed. Tubers receiving radiation from $1\text{-}4 \times 10^6$ rep. darkened progressively, whereas the epidermis of samples irradiated at $8\text{-}60 \times 10^6$ rep. remained yellowish-white, similar to that of non-irradiated tubers. A catechol test further indicated acceleration of enzymatic activity in samples receiving lower doses, and enzyme inactivity at higher levels.

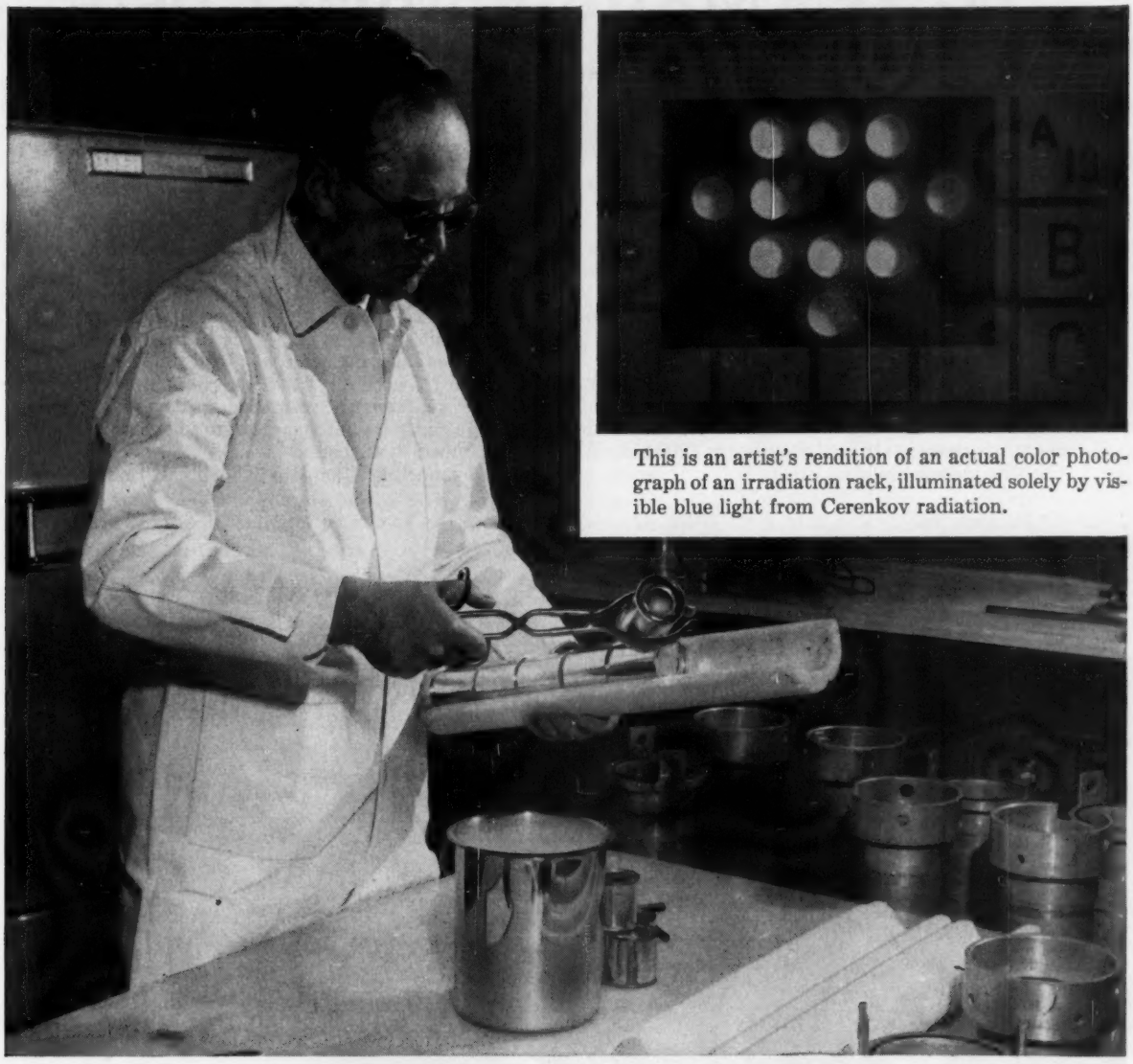
For our chemical analysis, a 95% ethanol slurry of each irradiated sample was prepared. Results (table) show that as radiation dose increases, fructose content rises and inulin percentage drops, total solids remaining fairly consistent. —*End*

D. K. SALUNKHE & F. Y. MOSER

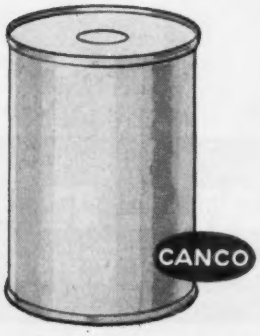
Horticultural Research Laboratory, Utah State University, Logan. (Article is based on Research Paper 816, Contribution 58 from Utah State Agric. Exp. Station, a report of a study undertaken in cooperation with the Quartermaster Food & Container Institute for the Armed Forces. Views are those of authors, and are not to be construed as reflecting indorsement by the Defense Department.)

TOMORROW'S CANNED FOODS MAY BE EVEN BETTER BECAUSE OF EXPERIMENTS WITH **NUCLEAR ENERGY!**

This is an artist's rendition of an actual color photograph of an irradiation rack, illuminated solely by visible blue light from Cerenkov radiation.



One experiment calls for the exposure of frozen canned foods to gamma irradiation. This photo, taken at the Argonne National Laboratory, shows cans being placed in an insulating cylinder. The cylinder will be sealed within one of the aluminum urns (at right), then lowered into the water of the radiation canal. There it is exposed to rays yielding from one to two million roentgens an hour.



High energy irradiation, alone or combined with thermal processing or freezing, shows interesting possibilities as a means for preserving packaged foods. To explore fully this new technique, American Can Company scientists are participating in an extensive irradiation research program.

Part of this work is carried on through cooperative projects at government and university laboratories, part through independent studies at Canco's multi-million-dollar Research Center in Barrington, Ill. As a result of this program, food for the nation's dinner tables some day may be sterilized by nuclear energy.

AMERICAN CAN COMPANY

For more data, circle this page number on card at back →

Industry Standard for Lower Maintenance Costs

LQ600®

Here's Why: Long accepted valve maintenance costs are a thing of the past in thousands of plants where LQ600's have been installed . . . even in the most severe services where previous valves required repair or replacement after as little as two weeks on the line.

These outstanding savings are made possible by seats and discs of Brinalloy®, a patented Lunkenheimer alloy that is more resistant to wear and corrosion than 500 Brinell Stainless or 1000 Brinell Case-Hardened Stainless Steel.

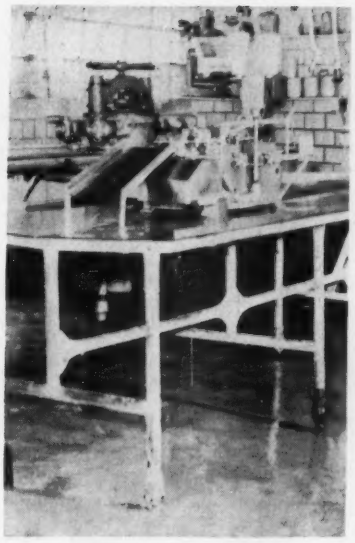
Add to this the Lunkenheimer exclusive silicon-bronze Stemalloy®, the most durable stem material ever put into a valve, and you have two important reasons why LQ600's have established new low-maintenance standards everywhere they are installed.

For an actual comparison test, call the Lunkenheimer Distributor in your area. He is an expert on valve maintenance costs and will be glad to demonstrate the maintenance-saving benefits you receive when you install LQ600's . . . or write The Lunkenheimer Company, Cincinnati 14, Ohio

LUNKENHEIMER® THE ONE *Great* NAME IN VALVES

In juice factory

There are no ruts or rough spots in floor of loading dock resurfaced with new material.



. . . packing house

No leaks or slippage in sausage room, since ½ in. of material was troweled on old floor.

. . . spaghetti plant

Week-end repairs made spaghetti canner's plant and dock floors safer and longer-lasting.

Repairs Problem Floors

New poured-in-place material that can be applied to wood or concrete resists acids, alkalis, and heavy trucking

FLOOR MAINTENANCE, an extremely acute problem in food processing areas exposed to acids, alkalis, fats, and sugar, is now being alleviated by a new high-strength coating.

An example is the recently introduced monolithic surfacing material, Monile, (Master Mechanics Co., Cleveland) which has proved itself in more than a score of food plants over the last four years.

It's Mixed on the Job

The material is prepared by mixing a copolymer liquid with a selected aggregate in a conventional cement or plastic mixer. Then it is applied (recommended thickness ½ in.) to the old floor and troweled to the desired finish.

The floor cures rapidly. And it compares in appearance, and in resistance to acid, alkali, and grease, with ceramic materials now largely used in new food-plant construction.

Also, its unusual flexual and compressive strength, plus exceptional bonding characteristics, make it equally suitable for repairing both concrete and wood floors.

Pertinent Examples

Here are a few case histories that demonstrate Monile's quality:

1. *Royal Sausage Co., Cleveland*—Original floor of stuffing room, a concrete slab poured over wood, had become pourous and broken from acids, meat fats, water, and constant trucking. It permitted water to leak through into storage rooms below.

Solution: Floor was thoroughly cleaned and a heavy grout applied where wide cracks existed. Monile was then hand-troweled ½ in. thick over surface.

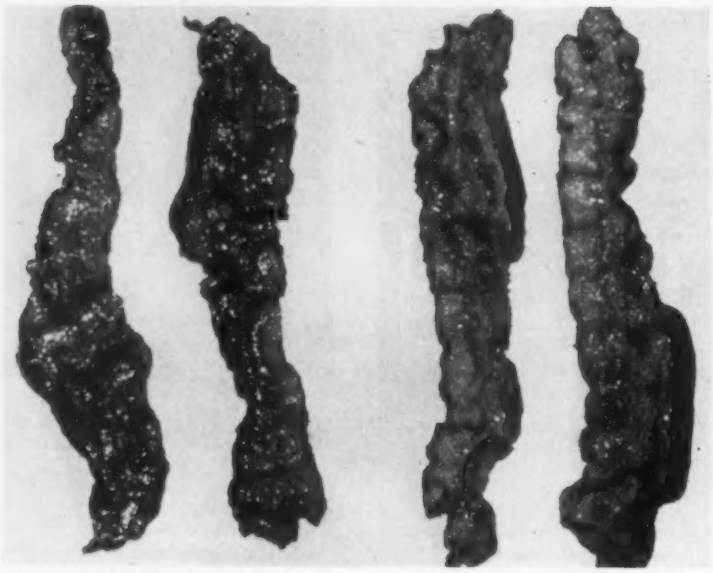
Although constantly covered with hot water and fats, there has been no apparent deterioration in the several years since repair was made.

2. *Welch Grape Juice Co., Westfield, N. Y.*—Concrete in floors in pasteurizing area, and on loading dock and ramp on which fork trucks move waste from processing, were in bad shape from fruit acids, sugar, and water, as well as heavy traffic.

Solution: On loading dock, deeply spalled areas were restored and loose patching material removed. Pasteurizing area and ramp were thoroughly cleaned. Then all were surfaced with ½ in. of Monile. Exposure and trucking have not affected the new surface nor its bond to the subfloor. Company now uses product regularly.

3. *Catelli Food Products, Montreal*—Floor surface in canning area had failed due to boiling water, amino acids, soup, and sauce spillage. And concrete floor of loading dock was rutted and spalled from heavy trucking and water soaking.

Solution: Surfaces were covered with Monile over the weekend (time 60 hr.). Result: Safer, longer lasting floors at savings in time and cost. —*End*



ADVANTAGES ARE REVEALED in comparative fryings (same heat and time) of bacons. Sugar-cured products (two strips on left) scorch and caramelize, whereas Sucaryl-cured samples (right) don't.

New Sweetener for Cured Meats

Marked improvement in color, flavor, and frying qualities of bacon and ham noted with use of MID-approved cyclamate — easy to employ in curing pickle . . . Tests on other cured meats encouraging

BACON that doesn't scorch or stick to the pan, and ham that's meatier in taste, are improvements we now find possible with a synthetic sweetening agent—the cyclamate Sucaryl—in the curing pickle.

No wonder meat packers are excited about its possibilities for cured meat products. Some are starting to offer cyclamate-cured bacon, and many are studying the advantages it may offer in ham, sausages, and other cured meats.

Bacon Benefits Seen

Trouble with sugar-cured bacon is that it tends to scorch, when crisp-fried, because the sugar caramelizes. And the resultant taste obscures natural meat flavor. Caramelization also makes bacon stick to the pan, while the residual fat darkens and contains considerable sediment.

However, these cyclamate-cured meats don't scorch—because the synthetic sweetener is exceptionally heat stable. Since it's not a carbohydrate, it doesn't caramelize and become bitter. Bacon that is fried crisp remains light brown in color. And because the meat doesn't stick, the pan readily cleans without scouring.

Still another consideration is the fact that most housewives re-use bacon fat. So they should like the fat from the cyclamate-cured bacon. For it is light colored, as well as relatively clear and cleaner tasting.

The cyclamate-cured bacon and ham are more appetizing in taste. Higher sweetness levels are possible, if desired. And, since the synthetic sweetener has no caloric value, the meats treated with it contain less calories.

Moreover, the cyclamate doesn't support mold or bacterial growth. For unlike sugar, it's not fermented. This may improve keeping qualities of meat—such as making bacon less susceptible to mold growth.

Sucaryl is convenient to use in preparing a pumping pickle—100 lb. replaces over 3,000 lb. of sugar. Example of a formula for bacon: Water, 50 gal.; salt, 72 lb.; Sucaryl sodium, 8 oz.; and sodium nitrate, 13.2 oz. To adapt the cyclamate to any formula, you merely replace sugar on the basis of Sucaryl being about 35 times as sweet.

Cite Ham Improvements

Cyclamate-cured ham has a superior taste. Two independent taste panels evaluated Sucaryl-cured versus sugar-cured hams, and both preferred the former. General reaction was that the cyclamate not only sweetened the meat, but enhanced its natural meaty taste. Some also reported an improved color.

Studies are now in progress to evaluate the cyclamate in both cooked and dry sausages and in canned meat products—wherever sweetness is desired.

Ease of using Sucaryl, as well as the economy, should appeal to meat packers. In general, no adjustment in formula is necessary, other than substituting, say, 30 of the previously employed 100-lb. bags of sugar with one 100-lb. drum of cyclamate. Relatively small amounts of cyclamate are needed, and volume loss from removal of sugar is made up with water.

Memorandum 249 from the MID (Meat Inspection Division, USDA) permits use of cyclamate in bacon in amounts up to 0.15%. The package label must then prominently display near the product name a statement such as: "Sodium cyclamate, an artificial sweetener, added." However, a supplementary memorandum forbids use of nitrate in a cyclamate curing pickle, although nitrite is permitted.

MID has also approved use of the cyclamate in hams for dietetic purpose, with labeling as indicated. Use in other meats is being considered by MID.

It is to be noted that "cyclamate" is the generic name for the synthetic sweetening agent Sucaryl. There has been wide use, for several years, of Sucaryl calcium in dietetic beverages and canned fruits. —*End*

KARL M. BECK, ROBERT L. JONES, and L. W. MURPHY

First two authors with Abbott Laboratories, North Chicago, Ill., last named with George A. Hormel & Co., Austin, Minn.

Emery NEWS

WEIGHING SYSTEM

BIN, TANK AND HOPPER EDITION No. 8

Covering design, development and application data on Emery Weighing Systems for industrial applications.

AMAZINGLY SIMPLE EMERY WEIGHING SYSTEMS SPEED CONTROL OF CONTENTS IN MULTI-TANK OPERATIONS

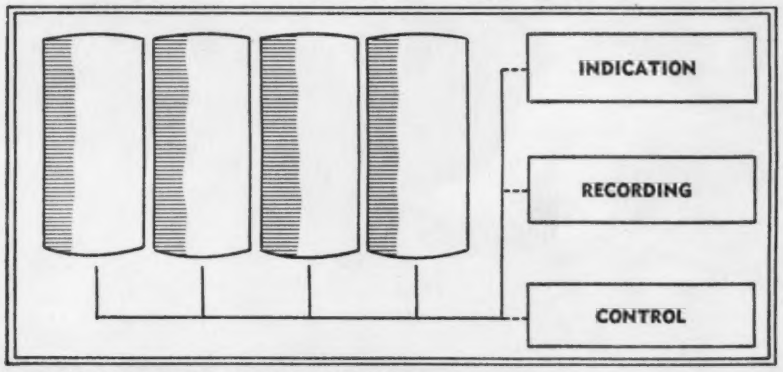
RUGGED EQUIPMENT OF CLOSED HYDRAULIC SYSTEM GIVES MAXIMUM ACCURACY AS WELL AS PRACTICALLY MAINTENANCE-FREE PERFORMANCE.

The key to the renowned accuracy, repeatability and maintenance-free operation of the Emery Weighing Systems is the unbelievable simplicity of the sturdy Emery Hydraulic Load Cell. Built with the precision characteristic of all top-quality instruments, the Emery Cell incorporates the ruggedness which makes it ideally suitable for rough industrial usage.

In effect, the Emery Cell is a transducer which converts load into proportional pressures which, in turn, are used to operate suitable instrumentation. The Emery Load Cell nullifies the use of complicated electrical circuits and electronic devices. Any man in your shop can understand and operate an Emery Weighing System.

In multi-tank operations, the Emery Weighing System is particularly applicable. Because of the simplicity of its design, it is usually less expensive than the more complicated weighing systems. Yet, in use, it provides uncanny accuracy and repeatability and all tanks can be weighed and controlled from one control station.

Whether you want simple indication, recording, combination indication and recording, simple or complex control, or a variety of printed forms, investigate the possibility of using the usually less expensive and easily the most simple tank weighing system available today.



WHAT DOES YOUR PROCESS REQUIRE?

Is simple weight indication adequate? Do you need recording? Could you use printed records? Do you want automatic control? All of them are readily available to you either at the tanks or at a remote station.

BUY SIMPLICITY . . .

When you buy a tank-weighing system, buy the readily understandable, easy-to-operate, maintenance-free, Emery Weighing System. Don't burden your processing operations with complex, hard-to-handle, electronic circuits and devices. **Stay simple . . . buy Emery!**

FOXBORO

Quality Instrumentation

One instrument manufacturer whose products team up effectively with the simple design of the Emery Load Cell is The Foxboro Company.

Shown here is the well-known Foxboro Circular Chart Recorder with an Indicator Dial. This instrument is eminently suitable for multi-tank installations.

Our engineers will gladly discuss the application of Foxboro instrumentation or instrumentation of any other top quality manufacturer to your Emery Systems.

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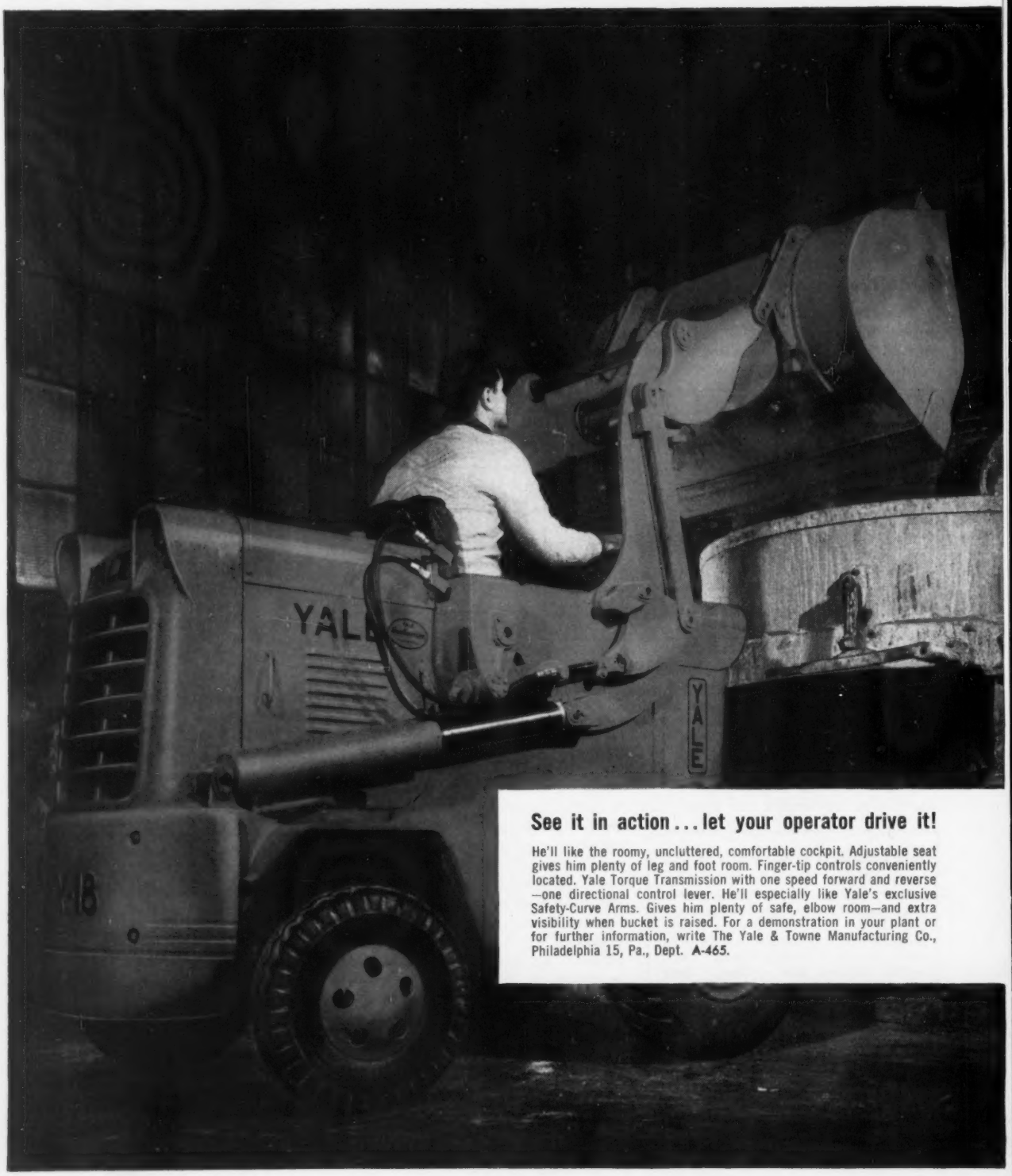

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He'll like the roomy, uncluttered, comfortable cockpit. Adjustable seat gives him plenty of leg and foot room. Finger-tip controls conveniently located. Yale Torque Transmission with one speed forward and reverse —one directional control lever. He'll especially like Yale's exclusive Safety-Curve Arms. Gives him plenty of safe, elbow room—and extra visibility when bucket is raised. For a demonstration in your plant or for further information, write The Yale & Towne Manufacturing Co., Philadelphia 15, Pa., Dept. A-465.

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At last—a tractor shovel designed especially for industry! Whether you handle bulk chemicals, sand, gravel, scrap or raw materials, you'll get more productive work at less cost per work unit with this new concept in a tractor shovel.

Yale designed it for tight areas—built it *compact* (only 117" overall length) so that it can maneuver in any aisle wide enough for a wheelbarrow. *Accelerates to an operating speed* of 8 mph. in 3.5 seconds and to a top speed of 13 mph. in 5.5 seconds. Exclusive *Yale Torque Transmission (fully automatic)* permits quicker, smoother starting, eliminates shifting, provides more power under load conditions—in a word, *speeds cycle operations.* This extra speed, plus the greatest carrying capacity of its class (full 2500 lbs.) means *up to 25% more work per hour.*

Yale's loader-linkage design offers unique advantages. Exclusive 45° *Ground-Level Tipback* insures the ultimate in loading action—and a grade-level carrying position to minimize spillage. Exclusive 6 foot *Dumping Clearance* is highest on any model of similar wheelbase. Bucket is *Automatically Self-Locating.* Operator merely lowers from full dump-position to ground-level—bucket automatically returns to digging position.

a product of Yale's integrated design—these engineering advances are standard features

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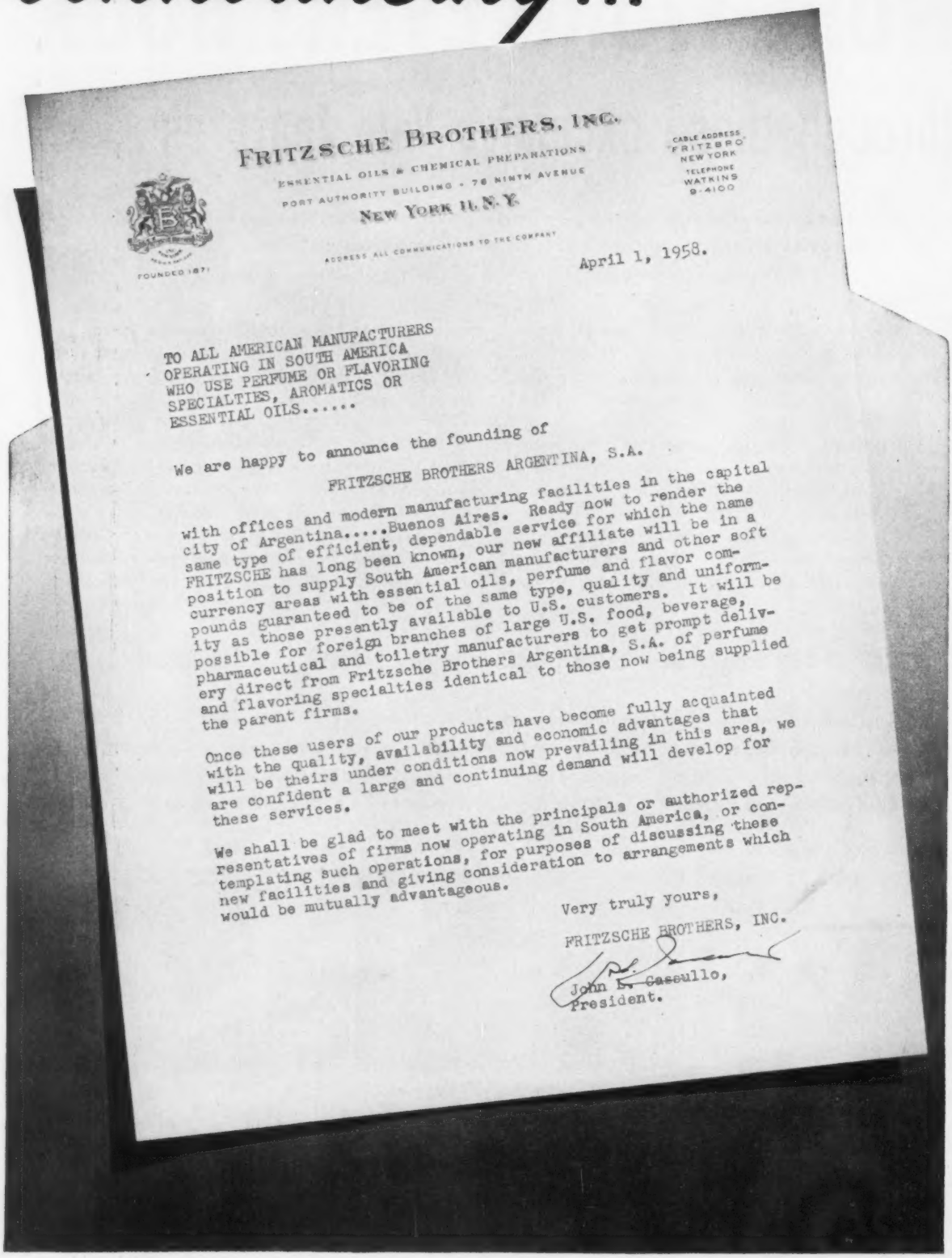

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with offices and modern manufacturing facilities in the capital city of Argentina.....Buenos Aires. Ready now to render the same type of efficient, dependable service for which the name FRITZSCHE has long been known, our new affiliate will be in a position to supply South American manufacturers and other soft currency areas with essential oils, perfume and flavor compounds guaranteed to be of the same type, quality and uniformity as those presently available to U.S. customers. It will be possible for foreign branches of large U.S. food, beverage, pharmaceutical and toiletry manufacturers to get prompt delivery direct from Fritzsche Brothers Argentina, S.A. of perfume and flavoring specialties identical to those now being supplied the parent firms.

Once these users of our products have become fully acquainted with the quality, availability and economic advantages that will be theirs under conditions now prevailing in this area, we are confident a large and continuing demand will develop for these services.

We shall be glad to meet with the principals or authorized representatives of firms now operating in South America, or contemplating such operations, for purposes of discussing these new facilities and giving consideration to arrangements which would be mutually advantageous.

Very truly yours,

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John D. Cassullo,
President.

Salt Substitute for Dieters

Potassium chloride, dipotassium succinate, and dipotassium fumarate comprise the ingredients of a patented salt substitute useful as a dietary supplement for persons requiring a sodium-free diet.

The mixture meets requirements of a substitute for common table salt in that it resembles salt in taste, appearance, physical properties, stability, and non-toxicity.

The following formula is illustrative of the invention: Potassium chloride 100 g., dipotassium fumarate 30 g., and dipotassium succinate 70 g. Ingredients are ground to 42 mesh and thoroughly mixed, then 0.2g. sugar is added. The product is salt-like in taste, nonhygroscopic, and readily soluble in water. U. S. Patent 2,824,008, Feb. 18, 1958.

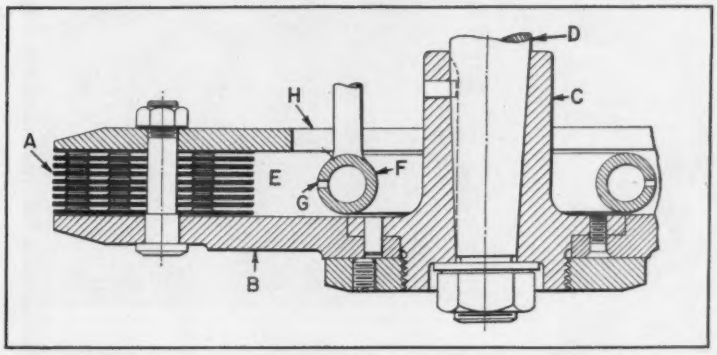
Fat Content of Cacao Nibs Reduced by Roasting

Cacao bean roasting results in a loss of cocoa butter, which has been reported as high as 2%. Laboratory tests on raw and roasted beans, in which the shell was separated by hand from the nibs, confirmed these losses but they did not correlate well with plant losses.

Venezuela beans with 51.28% fat (dry basis) in the raw whole beans, showed 50.70% after roasting. The nibs had 56.93% fat before roasting, 54.80% after roasting.

During roasting, fat content of shell fraction increases, and diffusion of fat from nib to shell particles is probably responsible for most of the losses. A secondary cause is absorption of fat by dried pulp residues when the nibs are broken, especially if beans are broken before they are cooled.

Fat losses caused by incorrect roasting and breaking can be several times as large as the primary loss due to diffusion from nib to shell particles. The value of the fat recoverable from dusts and shell particles may be as much as $8,700 per 1000 tons of beans, and recovery is therefore worthwhile. — *International Chocolate Review* 12(12), 512-20, 1957. (In German)



Centrifugal Atomizer for Spray Dryer Features Easily Replaced Head

Uniform atomization and easy replacement of its low-cost head are features of a patented centrifugal atomizer for spray drying.

Device consists of a nest or basket of metal disks (A in drawing above) suitably mounted on plate (B) that is attached to hub (C). Atomizer is mounted on shaft (D) which extends vertically through top of drying chamber and is connected with suitable driving means.

Feed reservoir (E) is supplied with material to be dried through hollow member(F) provided with a plurality of slots (G). Material moves outward between the individual plates and is discharged into drying chamber by centrifugal force.

The individual disks are preferably composed of stainless sheets formed to provide struck out projections or dimples. Disks are stacked in pairs with dimples of each faced toward the other and in contact. When stacked, disks of each pair are separated by the dimples to form a maze of oppositely inclined surfaces which interrupt the spaces. As a result, the outwardly moving feed material is broken up so that it discharges from the last row of dimples as finely divided droplets of uniform size.

In operation, the atomizer is driven at a speed of 4,000-6,000 rpm. As feed material, such as milk or concentrated whey, is pumped into it a certain amount of air is drawn from dryer into feed reservoir (E) through opening (H). This intermixes with the product and helps break up the liquid into a spray as it passes between the disks.

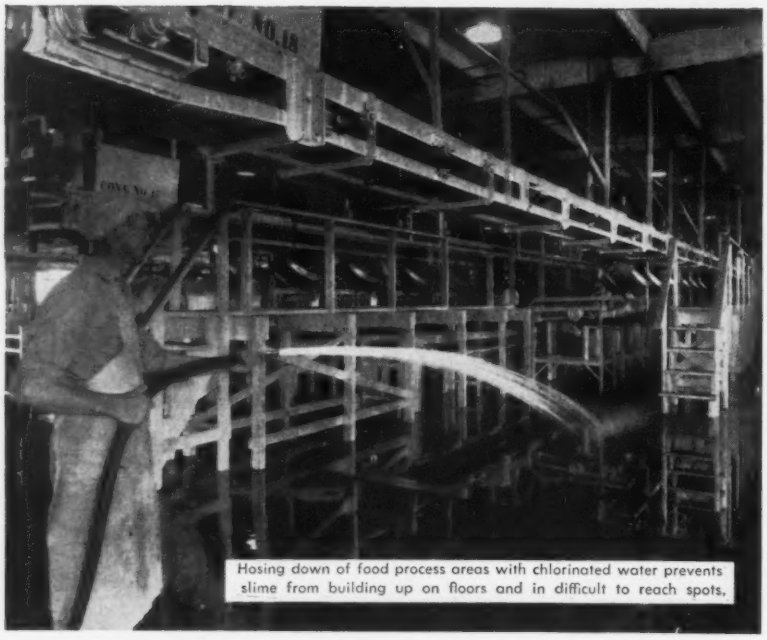
When disks become worn, it is a simple matter to remove them from plate (B) and apply a new stack.— U. S. Patent 2,814,527, Nov. 26, 1957.

Through-Circulation Drying Suitable for Grains, Beets

Drying of brewers' grains (ale, lager, and stout fermentations), and sugar beet cossettes by through circulation was investigated using a 1-ft. square mesh-bottom basket, and blowing air at differing velocities and temperatures through beds of different thicknesses.

Air temperatures of 100-220 F. were used for grains, 140-220 F. for cossettes. Air flows of 6.63-22.2 lb./sq.ft./min. were used for grains, and 6-21 for the beet cossettes.

Air velocity made little difference in drying time for thin (¼ in.) layers of brewers' grains, but had considerable effect on deeper layers. An 8 in. bed, through which dry air was blown at the rate of 7.66 lb./sq.ft./



Hosing down of food process areas with chlorinated water prevents slime from building up on floors and in difficult to reach spots.

HOW W&T IN-PLANT CHLORINATION

cuts clean-up time and keeps plant cleaner

At a large eastern quick-freezing plant, slime accumulation on processing floors was a problem. It was necessary to halt production runs frequently for clean-ups.

Wallace and Tiernan Chlorinators were installed on the plant water system and all water in the plant is now chlorinated. Besides eliminating slime on processing floors and equipment, In-Plant Chlorination helps to maintain a higher level of plant sanitation with greater ease. Clean-up times have been reduced as much as 50%. Floors are no longer slippery from slime and accidents from this source have been virtually eliminated.

For information about W&T In-Plant Chlorination send for Bulletin #I-58.

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W&T MERCHEN SCALE FEEDERS & METERS

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M-31

Advances in Technology

min. reached minimum moisture in about 300 min. as against 100 min. for a 4 in. bed. Agitation of bed decreased drying time appreciably.

With 200 F. air, sugar beet cossettes (2x0.4x0.25 in.) at a depth of 4 in. (2.25 lb./sq. ft. dry basis), dried in 135 min. when air velocity was 85 ft. per min. When velocity was increased to 288 ft./min., they dried in 85 min.

Air velocity should be high at beginning of drying, decreasing toward the end where high air velocities have little effect on drying rate. Prediction of drying time from the data is accurate to about 15%.

At temperatures of 210-220 F. there was some caramelization of cossettes after 80 min.; at 200 F. caramelization occurred only after 2½ hr.

Drying of fresh cossettes puts the sugar beet into a storable form that can be extracted in a more orderly manner than during the usual campaign when the highly perishable beets must be processed without delay.—*J. Science of Food & Agr.* 9(1),20-38, 1958.

Fruit-Sorting Machine

Novel improvements in a conventional fruit-sorting machine are disclosed in a recent patent.

They comprise: (a) Use of sponge rubber in appropriate places to prevent damage to fruit; (b) catch funnels that deliver it to crates, and (c) platforms suspended by springs that hold the crates up near the catch funnels. These springs allow the platforms to lower automatically as the crates become filled with fruit.

Fruit enters the machine through an intake chute and falls into individual baskets carried by an endless conveyor chain. Sorting is by weight, the heaviest fruit being tipped into a catch funnel nearest the intake chute. Progressively lighter pieces are dropped into funnels farther from the intake, depending on adjustment of jockey weights. Catch-funnel walls, and rollers that deliver fruit to crates are covered with sponge rubber.—U.S. Patent 2,821,-828, Feb. 4, 1958.

Pallet Loader-Unloader

Ingenious mechanical apparatus has been patented for handling heavy packages, particularly for loading and unloading cartons in patterned layers

← For more data, circle this page number on card at back

Alemite Portable Lubricator Saves 95 Man-Hours For Every Drum of Lubricant Applied!

Every point of lubrication in your plant can cost you needless time and money if you use old-fashioned hand lubrication methods!

With this Alemite portable air-powered lubricator, you save *95 man hours* for every 400-lb. drum of lubricant applied. Over *two* weeks of one man's time saved. That's how you can cut maintenance costs with Alemite.

In addition, Alemite's Model "711-A" is so compact and portable that it can bring clean, waste-free lubrication to *any* machine—*anywhere* in your plant—reducing machine downtime and prolonging machine life. Its pivot-swing dolly holds container upright at any pulling angle for easy moving over rough ground, indoors over rough floors, even up and down steps!

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Pointers

for Mixing and Blending • Size Reduction
Size Classification • Bulk Materials Handling • Pelleting and Densifying

Published in the interest of better processing by Sprout, Waldron & Co., Inc., Muncy, Penna.

VERTICAL MIXERS NEW SOURCE FOR AGITATED STORAGE

Faced with the problem of maintaining batch uniformity, a prominent manufacturer found the solution in a battery of four 150 foot Vertical Mixers which serve as reservoirs.

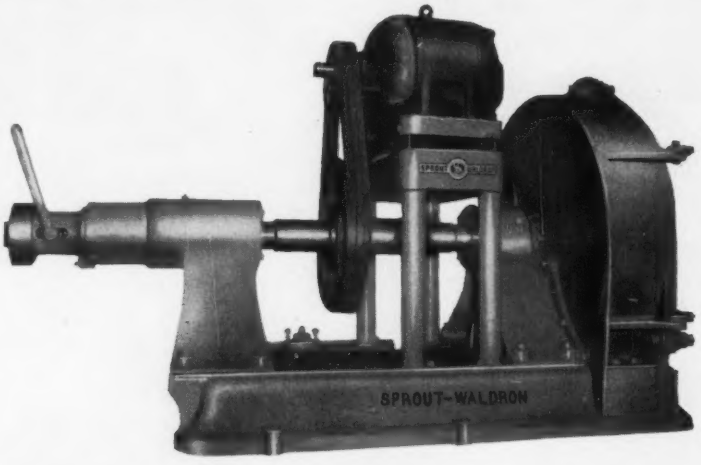
Stock emerging from the dryer is first passed through a disintegrating mill which breaks up any compacted lumps. The mill is fitted with properly vented surge hopper and a horizontal screw leading to each Vertical Mixer. In these mixers successive batches of die stuffs are thoroughly distributed among several preceding batches to assure continuous uniformity of the finished product.

For simplification, a single color is assigned to each mixer. This completely eliminates color contamination and frequent cleaning.

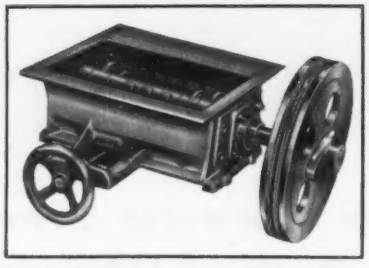
The Adaptioneered® Sprout-Waldron Vertical Mixers have to be dust-proof due to the fine character of the material. Each unit requires approximately 25 square feet of floor space and only 5 to 7 horsepower. The use of Vertical Mixers for agitated storage is a new twist, but a good one.

— SW —

Self-loading Sprout-Waldron Bulk Trucks cut handling and delivery of dry materials in the process industry.



Adaptioneered® Attrition Mill Puts Spring in Cork



To give cork the resiliency it needs to preserve the fizz in soda, the compression in your engine or the spring in your linoleum, it must be free of the hard pieces of bark that adhere so tenaciously. To remove this hard bark the granules were subjected to severe rubbing and squeezing on burr stone mills. Not only is this a slow process, with capacities approximately 750 pounds per hour, but dressing burr stones is a laborious and costly job requiring a special skill that is fast disappearing.

Adaptioneered® S-W Swinghead Single Disc Attrition Mills are now doing the job at twice the speed and for less money. In these mills the cork granules are rubbed and squeezed between two abrasive stone discs, one revolving and one stationary. The attrition mills are equipped with specially developed artificial stones available for a fractional cost of the original. Hand dressing is eliminated. Adaptioneering® saves this customer thousands of dollars annually in maintenance.

CP/102

BLOOD BOTTLES BUSTED

To avoid the risk of reusing unsterilized glass bottles used for the shipment of process blood, it was decided to destroy them by crushing in an Adaptioneered® Sprout-Waldron Single Roll Crusher.

Heavy duty glass bottles, the largest size being 3½" in diameter and 6" deep, are reduced to approximately ½" ring size at the rate of 1,000 a day, by an 18" Single Roll Crusher requiring only 12" working head room and only 5 horsepower. Bulletin No. 116-A tells the up-to-date story on S-W Single Roll Crushers. Copies available on request.

or tiers onto and from portable platforms.

Apparatus is designed for use in connection with a conveyor system which automatically delivers individual cartons onto a table in a layer or tier of predetermined pattern, according to the shape and size of the cartons. Layer is then lifted from the table by a suction head and delivered to a lift-truck platform.

Successive layers will be formed in varying patterns in order to insure a stable load on the platform. When the latter is suitably loaded it is removed to storage by a lift-truck.

In the reverse operation a loaded platform is delivered to the apparatus and the suction head lifts successive layers onto a table. There the pattern is broken up into individual cartons that are carried away by a conveyor. The entire operation may be made automatic.—U.S. Patent 2,822,933, Feb. 11, 1958.

Sterilizing Before Filling Improves Evaporated Milk

In an improved process for manufacturing evaporated milk the sterilization step is the crux of a recently patented procedure.

Instead of sterilizing the finished canned product in retorts, the concentrated milk is sterilized in bulk, then homogenized and finally canned under sterile conditions.

The milk is forewarmed at 269 F. for 35 sec. then vacuum-evaporated to a concentration of 26% total solids. Concentrate is sterilized and stabilized against gelation at 264 F. for 70 sec. This is followed by cooling to 210 F. and homogenizing at 4,000 psi. Final step is filling into sterile containers in an aseptic canning unit. Product is said to have a fresh milk flavor, light color and relatively low viscosity.—U.S. Patent 2,822,277, Feb. 4, 1958.

Homogenization Cuts Losses In Swiss Cheese-Making

Reduction in fat losses in whey, and fat leakage in the cheese are some of the benefits resulting from homogenization of milk to be used in making Swiss-type cheese.

These conclusions are based on studies with Jersey milk that was standardized to desired fat: casein ratio with natural or reconstituted skim milk, and pasteurized at 143F. for 30 min.

Turn page

Tap your own hot-water line for high-power cleaning . . . with the new Oakite SANISEPTOR

Oakite SANISEPTOR is made of 14-gauge seamless cold rolled steel. Mixing chamber and injector parts of brass and bronze. Holds 15 lbs. of detergent. Three hose nozzle tips furnished to handle different requirements.

A hot-water faucet and an Oakite SANISEPTOR — that's all you need now for mechanized sanitation on a plant-wide basis.

No pump, motor or steam supply. Use the pressure in your hot-water line to power the Oakite SANISEPTOR. Just fill the unit with concentrated Oakite detergent, hook into your nearest hot-water faucet . . . and that's all! A twist of the valve sends a jet-stream of hot detergent solution wherever you aim it. Twist another valve and you get instant rinsing action. Use it for speedy sanitation of tanks, vats, equipment, floors, walls, hard-to-reach places — everywhere in the plant. Weighs only 25 lbs. Eliminates ladder, bucket and brush, dangerous climbing.

Ask your local Oakite Technical Service Representative to demonstrate the new Oakite SANISEPTOR, or write for free illustrated folder. Oakite Products, Inc., 26G Rector Street, New York 6, N. Y.

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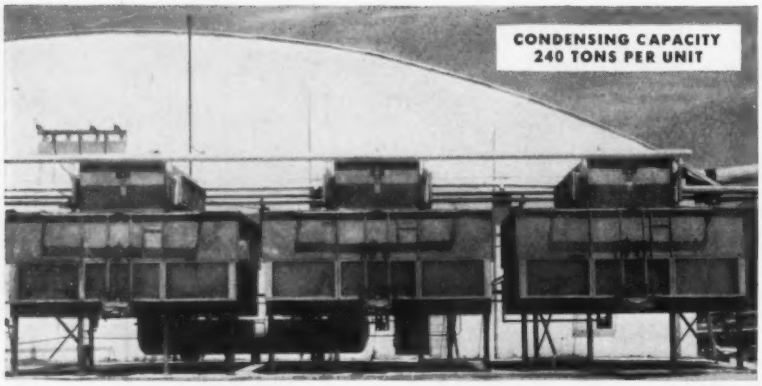

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Write for Bulletin 131

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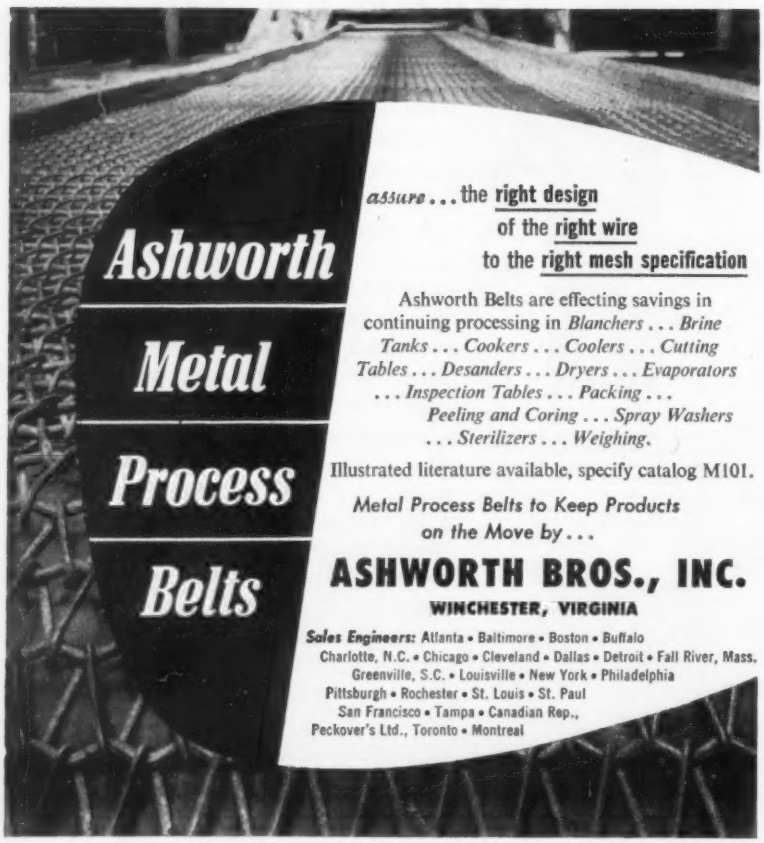

assure . . . the **right design** of the **right wire** to the **right mesh specification**

Ashworth Belts are effecting savings in continuing processing in *Blanchers . . . Brine Tanks . . . Cookers . . . Coolers . . . Cutting Tables . . . Desanders . . . Dryers . . . Evaporators . . . Inspection Tables . . . Packing . . . Peeling and Coring . . . Spray Washers . . . Sterilizers . . . Weighing.*

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Advances in Technology

Some portions were homogenized at 500, 1,000 and 2,000 psi. Swiss cheese was made from these portions and, also, from blends of untreated milk and that homogenized at 2,000 psi. to represent portions homogenized at 500 and 1,000 psi.

Highest yield was obtained from milk homogenized at 500 psi. This was followed by blended milk and that homogenized at 1,000 psi. Lowest and similar yields were obtained from unhomogenized and 2,000 psi. treated milks. After aging 3-months, cheese made from blended milk excelled all others.—*J. Dairy Science*, 70-73, Jan. 1958.

Baking Strength of Yeast

Compressed yeast loses its baking strength after it is harvested and formed into pound prints. Rapidity of this loss depends on the strain, method of growth, time of harvesting, solids content, temperature, and type of package.

When hourly samples were taken from normal 12-hr. yeast fermentations beginning with the 7th hr., best baking quality was shown in the initial sample. Poorest quality sample was taken after 15 hr (included 3 extra hours of ripening under aeration).

The 7th hour yeast lost baking strength much more rapidly, however, while the 15th hour sample was quite stable for a week. Keeping quality (resistance to softening at 98 F.) increased steadily from the 7th to the 15th hr., and was a reflection of the decrease in budding cells.

Percentage of dry substance reached a maximum 11 hr. after start of fermentation. Temperature rise in pound prints stored at 87 F. is almost linear with solids content, and is greater in prints wrapped in waxed paper than when parchment paper is used.—*Mitteilungen der Versuchsstation für das Gärungsgewerbe* (Wien), 11, (9/10),93-97, 1957.

Ready-Miscible Chocolate

Extraction of chocolate essence from cocoa by a non-thermal process is the subject of a recent patent.

The operation consists in stirring an aqueous slurry of cocoa and $Ca(OH)_2$ until desired extraction is accomplished. After filtration, fil-

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Brighter Appearance • Better Texture and Consistency • Finer and Fresher Flavor with EXCHANGE Products from Citrus

Exchange Pure California Lemon Juice

Lemon juice is nature's most effective anti-oxidant. It contains many organic reductants, including ascorbic acid and a rather broad group of phenolic anti-oxidants which fall under the classification of flavonoids, sulphydryl-like compounds and possibly flavonols, which act synergistically to give lemon juice its remarkable anti-oxidant properties. It discourages the growth of microorganisms, retards enzymatic action, prevents oxidative browning, reduces the pH of low acid foods and actually possesses the ability to enhance natural food flavor in many foods such as the natural peach flavor in freestone peaches. It is prepared by Sunkist Growers especially for industry use in baby foods, low acid fruits and vegetables, canned and frozen fruits, fruit juices and nectars, mayonnaise and salad dressings, sea foods in all forms, cured meats and wherever a problem of appearance or perishable flavor exists.

Exchange Citrus Pectin— Slow Set and Rapid Set

There is one tailored to your special need. They are used by more American preservers, confectioners, and food processors than all other brands *combined.* Guaranteed by Sunkist.*

Exchange Low Methoxyl Pectin— Pectin L. M.

The *only* pectin that forms a true jell without sugar. It is the exclusive choice for aspics, jellied fruit and vegetable salads, low calorie jams, and dietetic fruit jells. Guaranteed by Sunkist.*

Exchange Pure California Orange Juice

Gives your product more of the true fruit characteristics—because it is made from California oranges, known for their richer content of ascorbic acid, amino acids, polysaccharide complexes, B complex factors, carotene (pro-vitamin A), and aromatic flavor compounds. Prepared especially for the food and beverage industry. Guaranteed by Sunkist.*

Exchange Frozen Lemon Puree and Exchange Frozen Orange Puree

Both purees of whole lemons and oranges (seeds removed) are standardized in juice acidity, sugar content and flavor. Purees give a like-fresh tangy taste to food recipes and beverage formulas. Guaranteed by Sunkist.*

Exchange Lemon Oil, U. S. P.— California Cold Pressed

Because of its clarity, uniformity and flavor intensity, it is the 10 to 1 choice over all other lemon oils sold in America. Never needs pre-testing when received in EXCHANGE-sealed containers. Guaranteed by Sunkist.*

Exchange Orange Oil, U. S. P.— California Cold Pressed

For true aromatic flavor, full color intensity and pure California flavor strength, EXCHANGE brand is the orange oil standard of the world. Guaranteed by Sunkist.*

*Guaranteed by Sunkist

EXCHANGE brand citrus products are produced and guaranteed by Sunkist Growers, Inc., representing the world's largest supplies of lemons and rich California oranges.

Every EXCHANGE brand product is made in our own ultramodern plants to the highest standards of purity, quality and uniformity.

If you would like information on how Sunkist Research may help you to improve one of your products, write to:

Section "O"

Sunkist Growers

INDUSTRY SALES DIVISION
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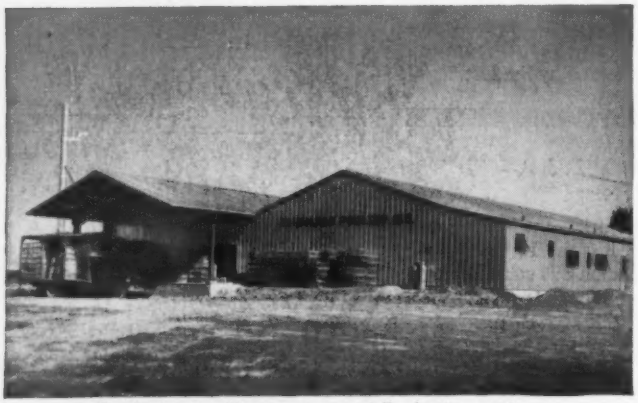
Dairyland Poultry Inc., Butler processing plant at Endeavor, Wisconsin.

Note excellent natural lighting, ventilation and sanitation characteristics.



Simple, functional lines create essentially pleasing exterior.

LOOKING FOR A WAY TO BUILD BETTER FOOD PROCESSING FACILITIES?

It is just the nature of the food processing industry that physical plant investment be kept to a minimum. Competition is keen. Margins are low—low even in the midst of a veritable revolution in processing, packaging and distribution. Construction expenses that would be considered normal in other industries are often sheer luxuries in food processing facilities.

That's why Butler pre-engineered buildings are so obviously *right* for food processing plant and storage construction. Your initial investment in planning and engineering time is minimized. Butler buildings are half finished before you sign the order—ready for occupancy weeks to months sooner than traditionally-built structures. The finished plant outperforms buildings costing much more. Post-free spans up to 120 feet provide unobstructed interiors for flow planning. Human comfort—better light, ventilation and ease of heating are characteristics pre-engineered into Butler buildings.

You can expand or change a Butler plant with much less time and money, practically no demolition. Doesn't this sound like the building for this industry? It is priced to prove it . . . not the lowest-cost way to get mere shelter, but the lowest-cost suitable construction.

For further details on Butler buildings—the low-cost way to build better food processing facilities, contact your Butler Builder. He's listed in the Yellow Pages of your telephone directory under "Buildings" or "Steel Buildings." Or write direct.

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trate is allowed to ripen. Then any dissolved Ca $(OH)_2$ is removed, pH is adjusted, and solution is clarified by final filtration.

As an example, 8-10 lb. of cocoa are slurried with sufficient warm water to make 4½ gal. To this is added an aqueous suspension of $Ca(OH)_2$, equal to about 5% of weight of cocoa. Mixture is then vigorously stirred for 3-5 hr. in a closed receptacle preferably in an atmosphere of nitrogen under slight pressure.

This is followed by filtration in a press under about 200 lb. pressure and in absence of air. Filtrate is freed from entrained $Ca(OH)_2$ by precipitation with phosphoric acid. Preferred pH of 6.65-6.9 is obtained by adding dilute acetic, citric, tartaric, or phosphoric acid.

On standing, the liquid takes on the color and taste of chocolate. It may be bottled and sterilized as is, spray-dried, or converted into a syrup by the addition of sugar.

Advantages claimed for the product include ready miscibility with milk or carbonated drinks without settling out after long standing, and retention of flavor that might otherwise be lost in a thermal process.—U.S. Patent 2,823,124, Feb. 11, 1958.

Pellets Remove Oxygen From Packaged Foods

Intimate mixture of a sulphite salt such as sodium sulphite, and an accelerator such as copper sulphate pentahydrate, has been patented as an oxygen remover for use in packaged dehydrated foods.

When placed in the package in pellet form this mixture will remove the last traces of oxygen left after the usual vacuum treatment followed by flushing with nitrogen.

The Cu ion triggers the conversion of sulphite into sulphate. It is essential that the chemicals be finely ground, intimately mixed, and subjected to a pressure of about 28,000 psi. to form a pellet.

When these pellets are placed in the head space of a package of dehydrated food, such as dried whole milk, they effectively remove the last traces of oxygen. Lithium, potassium, barium, iron, and calcium sulphites may be used. Cobaltous oxide and stannous chloride are also effective in triggering the reaction.—U.S. Patent 2,825,651, March 4, 1958.

Designed with the Look of Tomorrow by Raymond Loewy Associates

NEW PARTLOW MFS TEMPERATURE CONTROL

New Looks, Convenience, Efficiency for Your Process Equipment

Striking as they are, good looks are only part of the story of Partlow's spectacular new control. Inside and out, the MFS is as rugged and efficient as a temperature control can be, its tough mercury-actuated element having been built to retain sensitivity and accuracy even under extreme conditions. Convenient, too! You can interchange the mercury element right out in the field . . . no factory adjustment is required.

The MFS comes in 10 scale ranges. Accurate within ½ of 1% of scale range, it is especially adaptable to control applications where temperature variations must be kept at a minimum; or where sudden temperature changes demand instant response.

If your product or process requires close, positive temperature control within the –30° F. to 1100° F. range, you are invited to test this advanced new instrument soon. Write, wire or phone today.

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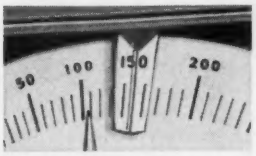
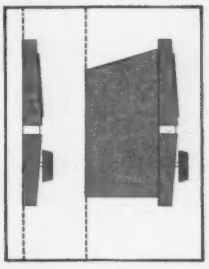


Accu-Vision Dial — Magnified pointer for closest settings. Dial calibrations, pointers and background scientifically color-contrasted for easy readability — even at a distance.



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Non-indicating Mechanical Controls — Timers
Recording and Indicating Thermometers
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PARTLOW

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CASE HISTORY:

Stokes & Smith - 'EG' Filler
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Richmond, Virginia
Packers of "Old Mansion"
brand spices

Rapid changeover increases daily output of short production runs

One simple adjustment on the scale beam changes the net fill to the desired weight, accurate to within 1/16 ounce plus or minus per pound. This adjustment is made by the operator without moving from the filling station.

"Our Stokes & Smith 'EG' Filler makes it possible to package our spices in sizes ranging from 1 to 16 ounces with 25% less changeover time than required by our previous equipment. This feature alone assures rapid filling of small orders which make up much of our business in pepper, cinnamon, nutmeg, cloves, allspice, chili powder and ginger. And by holding net weights to within 1/16 ounce per pound accuracy, it also eliminates time-consuming check weighing."

In addition to these advantages, Mr. R. H. Cardwell, Jr., of C. W. Antrim & Sons, Inc. also reports, "We can fill spices directly into a prefabricated bag which is then inserted in a rigid container. With a minimum of adjustment, a flip of a switch, we can change over to pressure pack filling or gross weighing directly into containers. The auger-type mechanism delivers a constant, smooth flow when handling either free-flowing or oily spices. Four point lubrication is all that is required because the 'EG' is electrically controlled, reducing mechanical parts to a simple belt drive and shaft instead of a complicated, hard-to-maintain mechanism."

The "sanitary" model of the EG Universal Filler will be introduced at the AMA National Packaging Exposition in New York. Booth 1216.

Putting Ideas to Work

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION

FOOD MACHINERY AND CHEMICAL CORPORATION
FMC Packaging Machinery Division
Stokes & Smith Plant
4914-Y SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

← For more data, circle this page number on card at back

ARABOL SPECIFICATION ADHESIVES

For adhesive strength and moisture-resistance

The convenient "six-pack" increases the unit of purchase – but the manufacturer's selling job does not stop at the check-out counter. The adhesive used in the forming of the package has to withstand rough handling – and often contact with water – before the product is consumed. Adhesives must be *specified* for these conditions, if the product is to be fully accepted. The adhesive must also perform in high-speed automatic equipment – efficiently and economically.

Strength and moisture-resistance are probably factors in your operations.

ARABOL Adhesives are specification-formulated for dozens of other requirements–in the making, packaging, labeling and shipping of the products of industry. *Specification* adhesives – to meet each of your requirements – cost little more (and sometimes less) than run-of-mill adhesives.

We invite the opportunity to submit formulated samples – for tests to be made in your own plant – under your own particular working conditions. That is the one kind of testing that assures you of satisfactory results.

Our fourteen plants and warehouses – plus four laboratories – are your assurance of service and delivery. It is our privilege to serve the leaders, as well as hundreds of small users. May we send you a helpful booklet listing 23 basic specifications for adhesives? Kindly address your inquiry to Department 95.

ARABOL

73 YEARS OF PIONEERING IN THE MAKING OF ADHESIVES

THE **ARABOL** MFG. CO. . . . *a nationwide organization serving major users of industrial adhesives*
EXECUTIVE OFFICES: 110 East 42nd Street, New York 17, N.Y. • CHICAGO • SAN FRANCISCO • LOS ANGELES • ST. LOUIS • ATLANTA • PHILADELPHIA
BOSTON • PORTLAND, Ore. • ITASCA and McALLEN, Tex. • CINCINNATI • DENVER • TAMPA • LONDON, Eng.

(*Advertisement*)

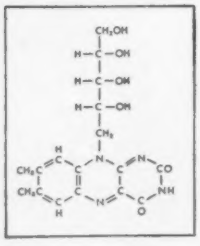
INSIDE SCIENCE

The Vital Story

A Quick History. Independent investigators, working separately to unlock several of nature's doors, sometimes open up unsuspected relationships. This happened with vitamin B_2.

Investigations. About 25 years ago, several groups, notably Warburg's, were investigating a "yellow enzyme" obtained from yeast. Almost simultaneously other investigators were studying a food factor that aided growth of laboratory animals.

What they found. Proceeding with chemical analysis of this growth factor, the team of Kuhn, György, and Wagner-Jauregg noted a relationship between the growth-producing agent and the "yellow enzyme." Their findings, and those of other researchers along similar lines, were published in 1933. Eventually, riboflavin and an essential part of the yellow enzyme were found to be identical and the unity of an essential nutrient and cellular metabolism was established.



Isolation of pure riboflavin was achieved by Kuhn and his co-workers, and by Ellinger and Koschara, in 1933.

Nomenclature. Known in the United States as riboflavin, this vitamin has also been called lactoflavin, ovoflavin, hepatoflavin, and vitamin G.

SYNTHESIS

By 1935, two eminent chemists, working separately, had synthesized riboflavin, practically in a dead heat. Prof. Paul Karrer of the University of Zurich, a collaborator of the Hoffmann-La Roche Laboratories, produced the first successful synthesis. Five weeks later Richard Kuhn of Germany announced his synthesis of the vitamin. Prof. Karrer subsequently shared the Nobel Prize in Chemistry for his work in vitamins and carotenoids.

The Karrer synthesis forms the basis for chemical processes in widespread use today by Hoffmann-La Roche and other leading manufacturers throughout the world. Riboflavin is also manufactured today by fermentation methods.

CHEMICAL AND PHYSICAL PROPERTIES

Riboflavin is yellow, slightly water-soluble with a greenish fluorescence and a bitter taste. Its empirical formula is $C_{17}H_{20}N_4O_6$. Vitamin B_2 produced by the Roche process is identical in every way with that occurring in nature.

How does vitamin B_2 work? Riboflavin is a vital part of nature's chain of reactions for utilization of carbohydrate energy. It has been found to be a constituent of many enzyme systems and is thus intimately connected with life processes. It is probably required by the metabolic processes of every animal and bird as well as by many fishes, insects and lower forms of life. (In certain animals, however, the requirement may be synthesized by bacteria within the intestine.)

In the cells riboflavin goes to work attached to a phosphate group. This substance, known as riboflavin-5′-phosphate or flavin mononucleotide, may in turn be attached to still another essential substance, adenylic acid, forming flavin adenine dinucleotide. Either nucleotide then is attached to protein, thereby forming an enzyme, and takes its part in oxidation-reduction reactions.

Requirements in Human Nutrition. As we have seen, vitamin B_2 is essential to life. We have no special storage organs in our bodies for this vitamin, although a certain level is maintained in various tissues, with relatively large amounts found in the liver and kidneys.

MEASURING METHODS

In the beginning, riboflavin activity was described in "Bourquin-Sherman units" and requirements were thought to be very small. Subsequent research showed otherwise. Milligrams of weight became the unit and the Food & Drug Administration of the U. S. Dept. of Health, Education & Welfare established (July 1, 1958) a minimum daily requirement of 1.2 mg. of riboflavin for all persons 12 or more years old. For infants it is 0.6 mg. These requirements are designed to prevent the occurrence of symptoms of riboflavin deficiency disease. The minimum daily requirement for this vitamin for children from 1 to 12 years is 0.9 milligram.

Recommended allowances. The Food & Nutrition Board of the National Research Council has recommended the following daily dietary allowances of riboflavin, expressed as milligrams. These are designed to maintain good nutrition of healthy persons in the U. S. A.

			Boys	Girls
Men			1.6	
Women			1.4	
"	(3rd trimester of pregnancy)		2.0	
"	(Lactating)		2.5	
Infants,	1-3	months	0.4	
"	4-9	"	0.7	
"	10-12	"	0.9	
Children,	1-3	years	1.0	
"	4-6	"	1.2	
"	7-9	"	1.5	
Adolescents,	10-12	years	1.8	1.8
"	13-15	"	2.1	2.0
"	16-20	"	2.5	1.9

(*Advertisement*)

# of VITAMIN B_2 *by* Science Writer

(Riboflavin)

Deficiencies of vitamin B_2 appear in several ways in human beings. The eyes, the skin, the nerves, and the blood show the effects of too little riboflavin. Laboratory animals have demonstrated that a riboflavin-deficient diet can cause death of adults and can slow or stop growth in the young. Female animals, deprived of riboflavin in the diet, may produce offspring with congenital malformations.

Medical uses. To overcome and control deficiencies in human beings, physicians have pure riboflavin available for administration by injection or orally, by itself or with other "B" vitamins or multi-vitamin-mineral combinations.

How do we get our daily riboflavin? Vitamin B_2 has wide distribution throughout the entire animal and vegetable kingdoms. Good sources are milk and its products, eggs, meats, legumes, green leaves and buds. Whole-grain cereals have significant but not large amounts of riboflavin.

ADDITION TO FOODS

Cereal foods play a large part in our diet. To produce the white flour almost all of us want, millers are obliged to remove parts of the wheat that contain much of the grain's riboflavin and other nutrients. In addition, cereal grains are not rich sources of riboflavin. Millers meet this problem by *enriching* the grain foods for which federal standards exist with vitamins B_1, B_2, niacin and the mineral iron. In the case of vitamin B_2, however, they do more than *restore* the processed food to its natural riboflavin level; they *fortify* the food with enough of this essential vitamin to make it nutritionally more valuable than it was in nature.

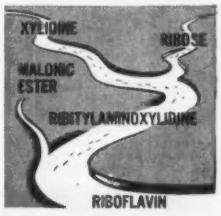
Acting to protect the good health of millions of Americans, bakers and millers adopted *enrichment* of white bread and white flour in 1941. Since that time, other foods, such as macaroni products, corn meal and grits, farina, pastina and breakfast cereals have had their food value increased by enrichment with pure riboflavin and other vitamins and minerals.

When enriching, fortifying or restoring, food manufacturers add the necessary quantity of riboflavin (and other vitamins and minerals) to the food during processing, so that the finished product meets federal, state, and territorial requirements or contributes to the consumer an amount of the vitamin that dietary experts believe significantly useful.

PRODUCTION

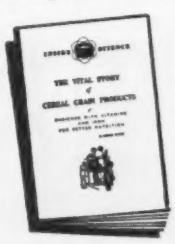
Prof. Karrer's synthesis of riboflavin was a laboratory success. Adapting the process to commercial production, however, demanded original thinking by chemists at Hoffmann-La Roche. The production of riboflavin by chemical synthesis requires the production of ribose, a rare sugar, at an early stage in the process. This special sugar must be made inexpensively if the synthesis is to be practical. Sugar chemistry is a difficult matter. In a brilliant piece of work, the Roche chemical experts developed a method to produce ribose on a commercial scale by an electrolytic process, thus overcoming a most troublesome problem. Subsequently, Roche chemists developed the first practical synthesis for riboflavin-5′-phosphate, identical with natural flavin mononucleotide.

Picture three streams joining to form a river and you have a simplified idea of the Roche process for synthesizing vitamin B_2. O-xylene and glucose are processed separately to form xylidine and ribose respectively. These are joined to form ribitylxylidine, which is then converted to ribitylaminoxylidine. Starting separately with malonic ester, which is processed through intermediate stages to alloxan, the third "stream" is then joined with ribitylaminoxylidine to form riboflavin. Purification occurs at each step of the synthesis. Riboflavin Roche equals or exceeds U. S. P. standards.



By the tons. So efficient is the Roche process that pure riboflavin is produced *by the tons* for use in pharmaceutical products and processed foods. An interesting development by Roche is the production of riboflavin in different forms related to the method of end use. Roche Regular riboflavin U. S. P. is especially useful in dry enrichment premixes, powdered dietary supplements, pharmaceutical tablets and soft gelatin capsules. Roche Solutions type is preferred for the manufacture of solutions having low concentration. Roche Riboflavin-5′-Phosphate Sodium is a highly and rapidly soluble riboflavin compound favored for all pharmaceutical liquid products and some tablets, lozenges, and capsules. It has a more pleasant taste than the bitter U. S. P. riboflavin.

This article is published in the interests of pharmaceutical manufacturers, and of food processors who make their good foods better using pure riboflavin Roche. Reprints of this and others in the series will be supplied on request without charge. Also available without cost is a brochure describing the enrichment or fortification of cereal grain products with essential vitamins and minerals. These articles and the brochure have been found most helpful as sources of accurate information in brief form. Teachers especially find them useful in education. Regardless of your occupation, feel free to write for them. Vitamin Division, Hoffman-La Roche Inc., Nutley 10, New Jersey. In Canada: Hoffmann-La Roche Ltd., 1956 Bourdon St., St. Laurent, P.Q.



SANDVIK "Tru-Track"* STEEL BELT CONVEYOR GIVES "...Faultless Operation" ON THIS PACKING LINE

"...so easily cleaned --"

"...runs perfectly straight --"

says user

VON'S GROCERY CO.
3750 WEST SANTA BARBARA · LOS ANGELES 8, CALIFORNIA
P. O. BOX NO. 8838, CRENSHAW STATION · PHONE AXMINSTER 4-4111

November 6, 1957

Olaf Hellsund
Sandvik Steel, Inc.
3338 South Malt
Los Angeles 22, Calif.

Dear Mr. Hellsund:

It has been one year since we purchased our two Tru-Track stainless steel conveyors from you. During this time they have been in constant use in our new Delicatessen Kitchen, giving us absolutely faultless operation.

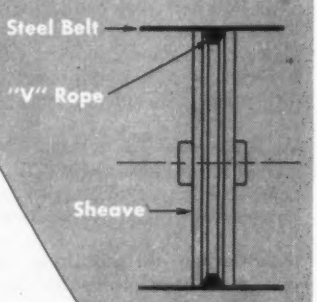
Our Manager, Bill Madison, says they are the best equipment in the plant owing to the fact that they are so easily cleaned and the belt runs perfectly straight at all times regardless of the weight it carries.

We have taken numerous operators through our kitchen and the conveyors surely got more than their share of attention from these visitors.

Last but not least, Mr. Hellsund, we were very pleased with your almost daily visits to our plant at which time you acquainted our plant personnel with your equipment during our first month of operation.

Yours very truly,
VON'S GROCERY COMPANY
Edw. F. Hirschman.
EDW. F. HIRSCHMAN,
DELICATESSEN DIVISION MANAGER

Schematic drawing of "Tru-Track" Design principle



*Pat. Applied For

Portable Sandvik "Tru-Track" conveyor carries packages of VON'S enchilada and salads from filling machine to packer on a stainless steel belt.

Another view of the SANDVIK Conveyor at Von's Grocery Co., Los Angeles, Cal. Stainless *Tru-Track* belt is 10" wide; carries product 20 feet. Entire unit mounted on casters for mobility.

25-158

SANDVIK STEEL BELT CONVEYORS

SANDVIK STEEL, INC.

Steel Belt Conveyor Department
1702 Nevins Road, Fair Lawn, New Jersey
In Canada: P. O. Drawer 1330, Station "O", Montreal 9, P. Q.

Branch Offices: Cleveland • Chicago
Los Angeles

Manufacturers Of Conveyors and Bake Oven Bands For Over 40 Years

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MEN & COMPANIES

Hamilton C. Davis

Bright Future for Canning . . . "America's canned food market is creating itself."

So says Hamilton C. Davis, who picks up presidential gavel of Canners League of Calif., laid down by Oscar R. Hayes.

He thinks that the future of canning is basically tied to population growth, and suggests that U.S. population may double, "or even triple," in the next 100 yr.

"Projections show a 35% increase just in the next 15-20 yr.," he points out. "We will not want for markets."

Calif. canners' new prexy is head of Walnut Creek Canning Co. and Davis Canning Co., and v. p. Patterson Canning Co. He is an experienced pilot, with over 4,000 hr. of business and personal flying time.

"Charlie" Kolb

Customers' Accolade . . . What can you do to make the wholesaler, the chain store and supermarket operator *want* to sell more of your products?

"We logged thousands of miles to ask 'em face to face what we could do," says C. A. Kolb, General Foods' director of trade relations.

"Charlie" has just been cited by National-American Wholesale Grocers' Assn., for "outstanding service to mutually beneficial manufacturer-distributor relations."

Most pressing plea from distributors, he reports, is for faster delivery. GF has added 7 new warehouses, and is studying other means to speed processing of orders.

President Mortimer adds, "We're trying to look through customer's eyes."

General James M. Gavin

Industry's Gain . . . Arthur D. Little, Inc., has snapped up the Army's "No" man, James M Gavin. As of June 1, he takes up duties as v.-p. and a director of the firm.

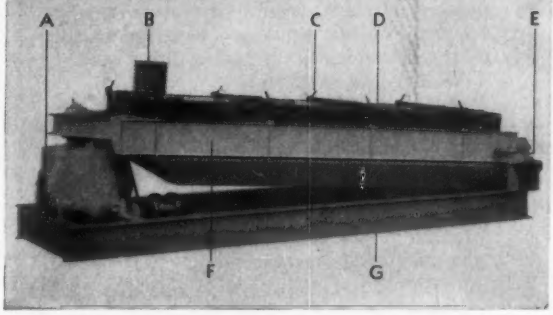
General Gavin made headlines recently when he protested Pentagon policies and backed up his stand by resigning as chief of Army Research and Development.

He says appreciatively that his new association "affords me an opportunity to broaden my interests in research. There is so much to be done and so many challenging problems that I am delighted."

The general spent 34 years in the Army, beginning as an enlisted man.

ROTEX® SCREENERS

GIVE PROFITABLE PRODUCTION!



A Quiet Running Counter-Balanced Drive
B Flexible Rubber Inlet and Outlet Sleeves
C Quick Release Cover Clamps
D Rubber, Dust-Tight Inspection Ports
E Self-Aligning Slide Bearings
F All Metal Screen Box
G Heavy Welded Structural Steel Base

For over 40 years ROTEX Screeners have been widely used throughout industry. Today there are installations in the United States and over 25 foreign countries. Built for dependable service, ROTEX are long known for accuracy, capacity and operating economy.

ROTEX SCREENING ACTION:

The nearly level, gyratory motion, pioneered in ROTEX, conveys materials rapidly over screen surfaces with minimum vertical vibration or hop. This stratifies the material by particle size, rapidly passing undersize particles through the mesh openings. The results are clean separations of exacting accuracy coupled with high capacity. Designed for operating convenience, ROTEX Screeners pay for themselves by the economies they effect.

ROTEX WIDE SELECTION:

To meet your requirements: 25 standard models—one to five screen surfaces—many semi-standard and special models—sanitary and all-metal construction available.

Write for Bulletin 401 and information on your screening requirements. Our engineering staff will be pleased to cooperate with you.

ROTEX FEATURES

- Low head room
- No screen blinding
- Fast screen changes
- Dependable service
- Dust-tite construction
- Rugged construction

ROTEX® The Orville Simpson Co.
1226 Knowlton St., Cincinnati 23, Ohio

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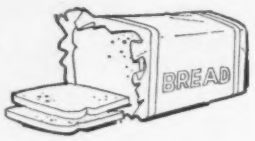
TAKAMINE ENZYMES

WORK FOR YOU ECONOMICALLY!

If your business is processing foods containing starches, proteins, pectins or glucose, chances are that you can produce a superior product more economically by using these specific TAKAMINE catalysts:

PROTEINASES



For the modification and hydrolysis of proteins in food and pharmaceutical manufacturing.

GLUCOSE-OXIDASE

Prevent browning due to glucose or oxygen or container corrosion, assuring longer shelf-life!

DIASTASES

For liquifaction and hydrolysis of starch to produce soluble dextrins and sugars, or to remove starch causing filtration problems.

PECTIC ENZYMES

For the hydrolysis of pectins in fruit and fruit juices to speed processing and to make fruit juices sparkling clear.

SODIUM ISOASCORBATE AND ISOASCORBIC ACID

are available in bulk or handy tablet form for protection of frozen fruits, vegetables, beer, carbonated beverages, meats and fish.

FOODS *Look* better
. . . *Taste* better
. . . *Sell* better
with TAKAMINE products.

Write TAKAMINE Research Center for complete information on the use of enzymes in your particular operation:

TAKAMINE LABORATORY

DIVISION OF MILES LABORATORIES, INC.
CLIFTON, NEW JERSEY

Climax of recent Borden Centennial Symposium on Nutrition was presentation of two awards "for pre-eminent and pioneer-in research in nutrition." Recipients (shown above) are **Lord Boyd-Orr** (left), 1949 Nobel Peace Prize winner and first director-general of the UN's Food and Agriculture Organization, and **Dr. Elmer V. McCollum** of John Hopkins U., discoverer of vitamins A and B_1. Citation, gold medal and $2,500 check made up each prize.

Big Push . . . Frank K. Montgomery, Jr, heads National Biscuit Co.'s recently consolidated Dromedary and Special Products divisions. He has been v.-p. in charge of latter since Oct. '57.

The merged division will spearhead Nabisco's stepped-up growth activities. Special Products was set up initially to distribute firm's newly-developed products.

Kick-off is "a vigorous marketing and advertising program" for Dromedary line.

Frank K. Montgomery, Jr.

Philip L. Becker has been upped from president to chairman of American Chicle Co. **Lysle E. Pritchard,** formerly sr. v.-p., becomes president.

A. Edward Brown has been elected president of Michigan Fruit Canners, Inc., Benton Harbor, Mich.

David Coleman has been selected as chairman of executive committee of Ward Baking Co.

D. G. Colony, Manton-Gaulin Mfg. Co., Inc., Everett, Mass., is new president of Dairy Industries Supply Assn. Russell B. Wilhelm, Owens-Illinois, Toledo, Ohio, is v.-p.

Raymond J. Kenard has been appointed v.-p. for finance of Coastal Foods Co., Cambridge, Md.

D. B. Pratt, Jr., of Pillsbury Mills, Inc., is new president-elect of American Assn. of Cereal Chemists.

George F. Salerno, president Salerno-Megowen Biscuit Co., Chicago, will be chairman of the executive committee of Pabst Brewing Co.

M. B. Thompson, mgr. of Geo. A. Hormel & Co.'s Fremont, Neb. plant, moves up to exec. v.-p. of company.

Industry

Frito Co., Dallas, will acquire **Nicolay-Dancey, Inc.,** Detroit, in a stock exchange totaling over $4 million.

E. & J. Gallo Winery has opened its new $100,000 viticultural lab. Expanded research program will explore natural processes by which grapes and wines mature, seek improved products and production methods.

Fritzsche Brothers Argentina, S. A., has begun operations in Buenos Aires.

Kathabar® systems deliver air continuously at dry bulbs and dew points down to minus 90 F

You know how much money you could save your company if you could get a continuous supply of air at conditions anywhere below 32 F dry bulb and dew point. You also know how free you could be if you didn't have to worry about frost, coolant temperature, and any other obstacles to low-temperature operation.

These profits are immediately available to you in a Kathabar-engineered air conditioning system. Specify any sub-freezing air conditions you require, and Kathabar engineers will meet your specs with a system which is economical, continuous, automatic, and simple.

sample conditions

The conditions you want may be in this group of Kathabar-engineered installations:

PROCESS	AIR OFF KATHABAR	
	dry bulb	*dew point*
Ordnance testing	-90 F	-100 F
Wind tunnel	-47 F	-61 F
Candy bar chilling	0 F	-19 F
Photo film chilling	6.5 F	2 F
Glass laminating	23 F	-2 F
Brewing	28 F	10 F
Chemical processing	24 F	5 F

These samples merely hint at the versatility of Kathabar systems. They will give you dew points as low as minus 90 F under pressure or vacuum, if you want them.

pay-off points

To you, the possibility of a continuous process at sub-freezing air temperatures might be the greatest advantage of a Kathabar system. To someone else, its precise control of dry bulb and dew point is the chief attraction. Others say they gain most from Kathabar engineers' knowledge of materials and processes.

All Kathabar low-temperature applications have clear advantages in common. They tremendously increase cooling efficiency by eliminating frost. This prevents refrigeration freeze-ups, avoids cyclic operation, and often gives better cooling with less tonnage.

They eliminate defrosting shutdowns and the need for duplicate coils.

With "Kathene" solution, the most potent chemical absorbent known, a 10 F to 25 F dew point depression may be obtained between the outlet air dew point and the cooling medium temperature. There is no need to cool the air or the absorbent to the desired dew point temperature. There is exact control of dew points without vaporization or "carryover." Regeneration of the absorbent is automatic and continuous.

Operation and maintenance are simple and economical. In many cases, Kathabar systems can be adapted to existing air conditioning systems.

who uses Kathabar systems

Kathabar systems make profits out of air for these industries:

Atomic Energy	Machining
Breweries	Marine
Cake Mix	Matches
Candy	Meat
Cellophane	Offices
Cellulose	Ordnance
Cereals	Paper
Chemicals	Pharmaceuticals
Coffee	Plastics
Comfort	Printing
Compressors	Rockets
Cookies	Rubber
Electronics	Sanitaryware
Explosives	Shellac
Film	Sugar
Foundries	Testing
Gelatin	Textiles
Glass	Transformers
Glue	Transistors
Gum	Vacuum Tubes
Hospitals	Varnish
Hotels	Waterworks
Lacquer	Wire
Lenses	Yeast

how they use Kathabar systems

Many of these industries use Kathabar systems for obtaining continuous air at sub-freezing dry bulbs and dew points. Others use them to (1) maintain spaces below 80 F and 55% RH; (2) maintain spaces at specific low bacteria or mold count; (3) eliminate wet floors, walls, equipment; and (4) improve drying processes.

Write for additional information; you'll get it by return mail.

send description of your problem

Air Conditioning and Drying Division
SURFACE COMBUSTION CORPORATION
2382 Dorr Street Todelo 1, Ohio

Kathabar systems by Surface

For more data, circle this page number on card at back →

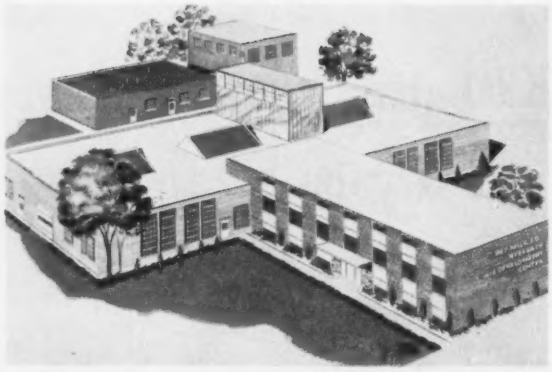
Packaged treatment for black eyes...

Are you getting a "black eye" in your town because waste from your plant is polluting streams...causing annoying odors? There's a simple "packaged" answer...an answer that may pay for itself.

CHAIN Belt Company has developed packaged industrial waste treatment equipment...Rex Float-Treat and Rex Verti-Flo®. These efficient units not only eliminate pollution...they can actually pay for themselves in the recovery of valuable materials heretofore "washed down the drain." Units are shipped complete and assembled. All that is needed is to connect the inlet piping to the plant waste lines. No expensive construction...no elaborate installation.

If you're interested in turning waste into profit or improving your public relations, write for informative literature and case histories on other plants that have invested in CHAIN Belt Industrial Waste Treatment units. CHAIN Belt Company, 4783 W. Greenfield Ave., Milwaukee 1, Wisconsin.

CHAIN BELT



Pet Milk Co. broadens and overhauls its research and development program. Big step will be summer completion of expanded center at Greenville, Ill. (architect's drawing above). It will house facilities for 8 r&d divisions, plus q.c. and plant inspection departments. Included are several pilot plant operations. Exec. V.-P. Gamble says he expects r&d staff will be doubled shortly.

General Mills has formed a subsidiary to produce and distribute Gold Medal and other known brands in Venezuela, S. A.

H. J. Heniz Co. has purchased all capital stock of Dutch food processor, Taminiau's Conservfabrieken, N. V., located in Elst, near West German border.

International Salt Co., Inc., will build $1,700,000 headquarters on 175-acre plot in South Abington Township, near Scranton, Pa.

V. La Rosa & Sons, Inc., has inaugurated a frozen foods division. Plans include building an additional wing at firm's Hatboro, Pa., plant, constructing warehouses at Danielson, Conn., and Brooklyn plants, and equipping several trucks with refrigerated units.

Penick & Ford, Ltd., Inc., will build $1,750,000 corn starch specialty plant in Cedar Rapids, Ia.

Reddi-Wip, Inc., L. A., has sold its Universal Food Products stock to group that includes Messrs. Stanley Sargeant, of Sargeant Citrus Products, Clermont, Fla.; Jules Wilson, president of Universal Food Products, Inc.; and Nash LeGette, president of Golden Gift, Inc., subsidiary of Universal Food Products. Purchasing group now holds over 51% of the firm's common stock.

Sokolik Packing Co. is now operating its new packing plant at National Stockyards, Ill.—said to be first all-new meat packing plant in area for more than a half-century.

Associated Industries

"Chemetron Corp." will be new name of **National Cylinder Gas Co.,** if stockholders approve.

Collapsible Tube Mfrs. Council reports that '57 shipments of collapsible metal tubes topped the record at 1,089,-838,656 units.

Mead Board Sales, Inc., Cincinnati, has opened a new sales office for Continental Europe in Duesseldorf-Grafenberg, Germany. Hanns J. Remmert is director.

Milprint, Inc., has thrown switches to begin production at its new $2 million plant in Downingtown, Pa.

Chas. Pfizer & Co., Inc., reports research and educational grants of nearly $1.4 million made in '57.

Taylor Instrument Co.'s President Raymond E. Olson has received DISA Honor Plaque for outstanding service to Dairy Industries Supply Assn.

Deaths

C. Everett Casto, 74, director and retired president, Ward Baking Co.

Marc C. Hutchinson, 70, president, Michigan Fruit Canners, Inc.

Francis J. Rowe, 62, gen. mgr., Atlantic Coast Fisheries Co.

Air Reduction gases help bring food to market

The increased use of gases in food processing is an important development in the food industry.

Air Reduction produces all the major gases used for food products—nitrogen, hydrogen, argon, nitrous oxide, and carbon dioxide. They can be supplied in the quantity and quality you need.

Technical representatives are ready to study your problem and offer their help toward practical solutions. Simply call your nearest Air Reduction office.

FOR YOUR USE: We've prepared a 24-page summary of the gases used in the food industry. For your free copy of "Facts on Gases Used for Food Products," write: Air Reduction Company, 150 East 42nd Street, N. Y. C.

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AIRCO HYDROGEN, NITROGEN, ARGON AND OTHER GASES • OHIO NITROUS OXIDE • PURECO CARBON DIOXIDE

present your product just right

H-A glass packages help sell your food faster. The sparkling beauty of each container makes your product stand out on crowded shelves. You help your customer get hungry when you put your food on display with Hazel-Atlas—

with ...*glamour in glass!*

nappys, plain and color-decorated re-use tumblers, mugs, barrels, crystal flint containers. Whatever you process or pack, wherever your plant is located . . . H-A has the facilities to serve you and your customers better.

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Div. of CONTINENTAL CAN COMPANY

WHEELING, WEST VIRGINIA

Illustrated here is the Walworth Lubricated Plug Valve No. 1700, available in sizes from ½" to 5" inclusive, suitable for 200 pounds water, oil, or gas working pressure.

problem-solvers for tough jobs

*LPV's by WALWORTH

If you're familiar with the basic advantages of Plug Valves, you know why Walworth Lubricated Plug Valves work so well in really tough spots. You know about their direct port opening . . . their dead tight shut off. Seating and sealing surfaces are fully protected from attack by fluids being handled by insoluble lubricants.

*Lubricated Plug Valves

Remember, you can get Walworth LPV's in all sizes . . . from ½ to 30 inches . . . for pressures up to 5000 psi and for vacuum service . . . in a number of different styles and patterns. For more information about LPV's and for your copy of the new Walworth LPV Circular, see your local Walworth Distributor.

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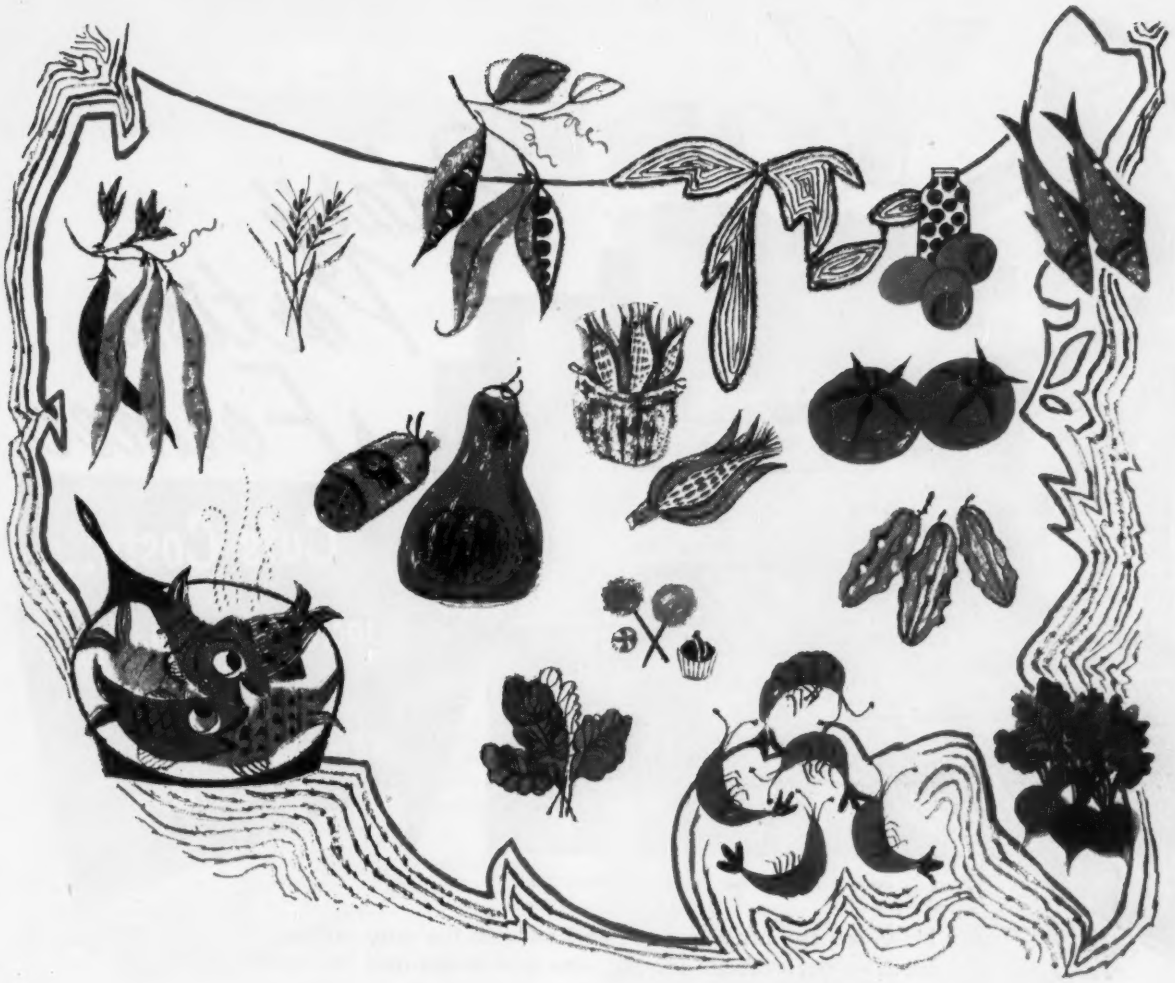

More Food Processors everywhere are using Morton '999' Salt

Food processors, canners and packers from coast to coast are finding that the quality of Morton '999' Salt is the standard of the food industry. They've discovered that '999' insures better, more uniform flavor in processed foods. And no wonder! Morton '999' is a low-price, premium-grade salt entirely free from bitter calcium and magnesium compounds that can distort flavor.

Morton '999' is always 99.9% clean, pure sodium chloride, exceptionally low in the trace metals copper and iron.

You can count on '999' quality—every time

Morton '999' is the highest purity salt commercially available in all 48 states. '999' quality never varies from shipment to shipment, whether you buy it in bulk for direct salting or brine, or in handy tablets made to your own specifications.

Send for complete information today

Regardless of your size or location, Morton offers the salt and service you need to help you do a better job. For information about Morton '999' Salt and the technical services Morton offers the Food Industry, write:

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INDUSTRIAL DIVISION
Dept. FE-5, 110 N. Wacker Drive
Chicago 6, Illinois

For more data, circle this page number on card at back →

YORK Rotary Portion Former

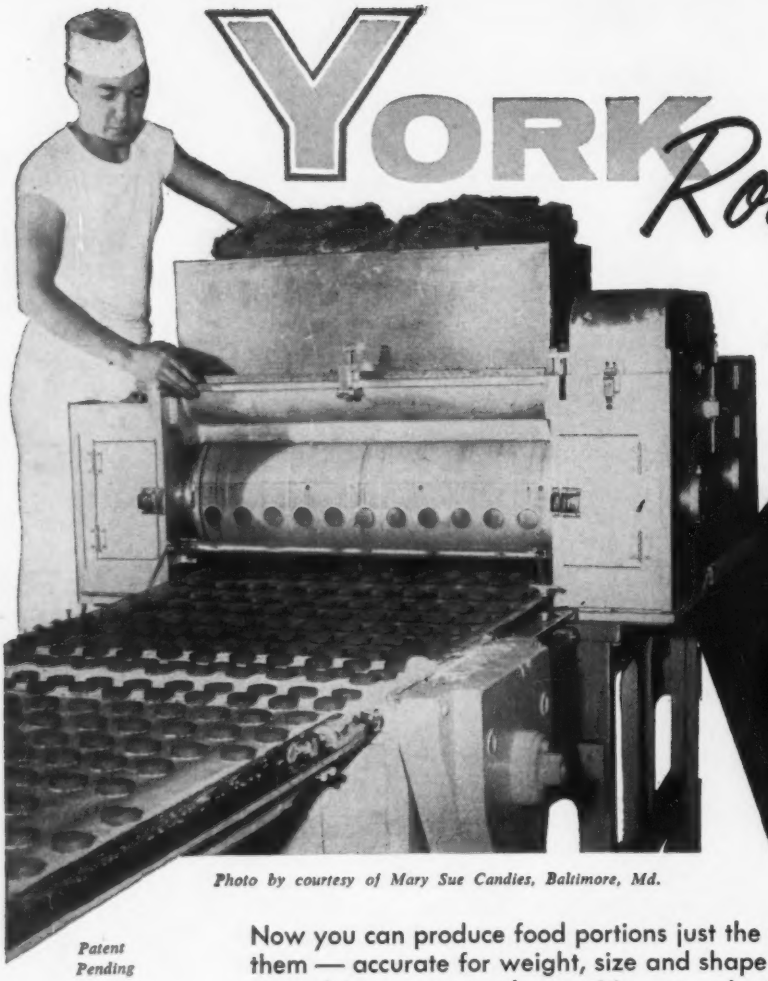

Photo by courtesy of Mary Sue Candies, Baltimore, Md.

Cuts Costs...
increases production of uniform portions.

Patent Pending

Now you can produce food portions just the way you want them — accurate for weight, size and shape and uniformly ejected in unsurpassed quantities per minute — with the York Rotary Portion Former.

- Operating on a new principle, the York Portion Former does not extrude but forms and shapes each portion individually.
- Vacuum forming prevents damage to the most delicate ingredients so that a wide variety of foods and food mixtures may be used.
- Can deposit 1800 small pieces per minute and handle 2500 lbs. of material per hour. Each machine is equipped with a variable speed regulator.
- Continuous operation through to fryer or freezer requires no storage between processing stages. Saves valuable plant space.
- Cuts costs, too! One York Rotary Portion Former paid for itself in only four months, through reduced labor time and costs.

York Rotary Portion Formers are available in three sizes: 16", 24" and 32" widths.

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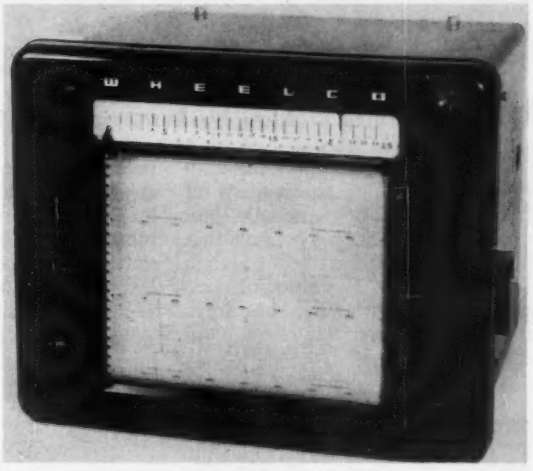
NEW EQUIPMENT & SUPPLIES



Compact Radiation Unit Monitors Process Heating

Surface temperature of a fast-moving process stream may be accurately gaged and continuously controlled with a new packaged instrument system.

Known as Multi-Frequency Radiation System, it consists of a highly sensitive pyrometer (left photo) and a specially calibrated potentiometer recorder-controller (right). Measurements may be made in the —40 to 800F. range, and accuracy is unaffected by color or transparency.

Principal advantage of this unit is its ability to measure actual product temperature—rather than that of the atmosphere surrounding it—at distances of several feet. Thus, process controllers can act within 1 sec. on variations of surface temperature as little as 1 deg. F.

Typical applications: Regulating heat or refrigeration input to process equipment, and speed-control of conveyors or heated rolls in drying and baking operations.

In operation, pyrometer uses the total energy radiated from a body as a measure of its temperature. A concave aluminum-surfaced mirror focuses this energy on hot junctions of a thermopile. Latter generates a voltage proportional to surface temperature and transmits it to the recorder-controller.

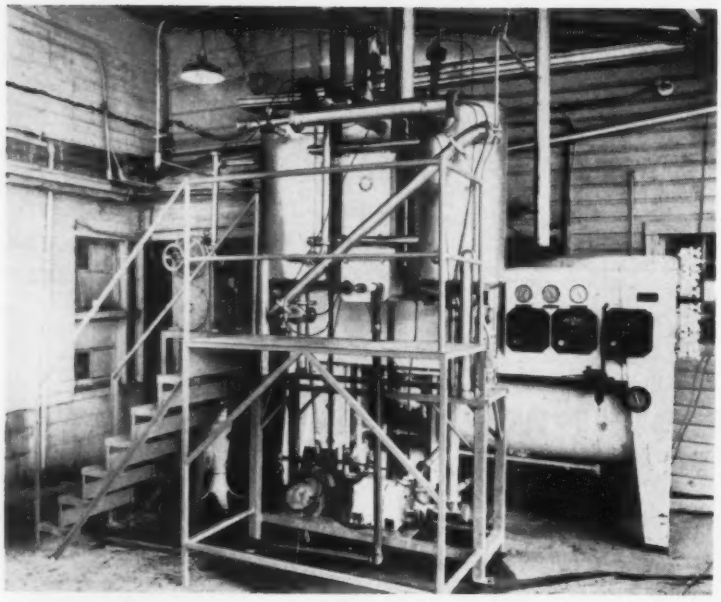
A plastic foil seals the pyrometer case, thus mirror and thermopile are kept free of dust and air currents. Housing is an aluminum-alloy tube, about 9 in. long and 4 in. dia. To compensate for changes in housing temperature, thermopile is connected to temperature-sensitive resistances.

Instruments come ready for plug-in installation.—*Velotron, Inc., 1186 Broadway, New York City.*

Circle 143A on Reader Service Card

Want More Information?

It's free—and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one given at the bottom of each item) on the handy Reader Service Postcard—back of book. Then sign at the bottom and mail. For your convenience, too, these items are listed and keyed in the Reader Service Section.



Ups Citrus-Juice Quality by Removing Air, Peel Oil

Removing air and peel oil from citrus juices prior to canning or bottling, this unit reportedly produces a sweeter-tasting product that is more accurately filled. System (Citroilair Juice Conditioning) exposes product to a flash heat-treatment of steam and vacuum that also improves shelf-life. Temperature ranges 175-195F. during processing, then juice is chilled immediately to preserve flavor and body. Three installations are now operating at 60-100 gpm.—*Cherry-Burrell Corp., 427 W. Randolph St., Chicago.*

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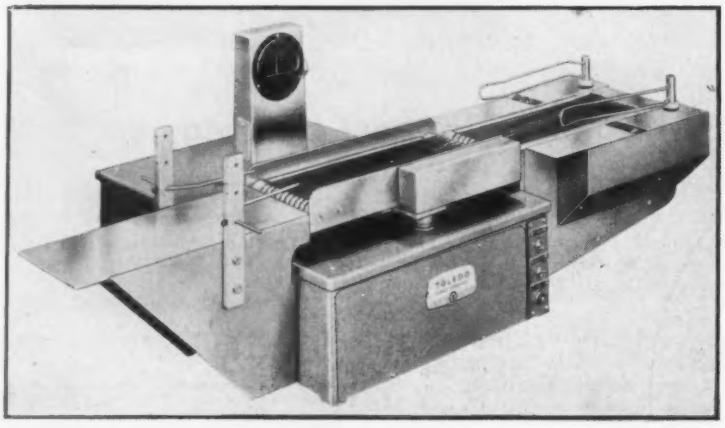

Checkweighs Items Up to 32 Oz. at 60 Per Min.

Accuracy, speed, and versatility are advantages cited for this automatic checkweigher.

At 60 per min., unit (Model 9455) handles items up to 32 oz., with accuracy of ±½ oz. Product size may range to 6 in. wide x 12 in. long. Overall checkweigher dimensions: 16¼ in. high, 27½ in. deep, and 27½-50 in. wide, depending on conveyor arrangement.

Unit's conveyor portion consists of approach, weigh, and take-away sections. A motorized take-away and diverting-gate mechanism directs out-of-tolerance items onto a reject conveyor or into a container. This device may divert in one direction or have a double gate to separate underweight items from those which are overweight.

All product-contact parts are of sanitary materials. Alarm signals (audible and visual) and electromagnetic counters are also available. —*Toledo Scale Corp., Toledo, Ohio.*

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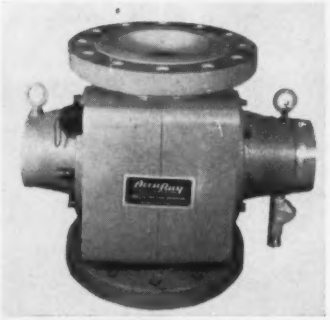

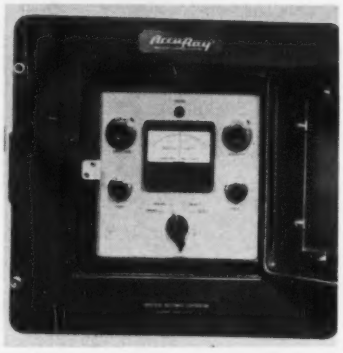

Gamma-Ray Unit Gages, Controls Liquid Density

Specific gravity or related properties may now be measured and/or controlled by a unique system of gamma-ray transmission from a radioisotope.

Applicable to liquids, slurries, granules, and powders, system (AccuRay) does not contact the flowing material. Measurements are independent of flow rate and pressure. Depending upon the process and material involved, accuracies of ± 0.001-0.003 specific-gravity units are readily obtainable. Built-in standardizing circuits maintain accuracy and calibration. Any component, except radiation source or detector, can be replaced without affecting calibration, and automatic built-in compensation for temperature changes can be provided.

Measuring head (top photo) is of

corrosion-resistant Meehanite castings welded on a section of pipe. Unit is designed to withstand severe shock and vibration. Standard pipe sizes range 3-8 in.

Power supply and amplifier (bottom) are housed in a panel-mounted enclosure, which may be remotely located. It has a locking access door, slide-out electronic unit, and modular chassis arrangement for easy maintenance. A recorder may be mounted separately.—*Industrial Nucleonics Corp., 1205 Chesapeake Ave., Columbus, Ohio.*

Circle 144C on Reader Service Card

Accurate Weighings Made With Portable Balance

Unaffected by vibration or temperature change, this portable multi-range balance is designed for weighings to microgram precision in production-line and laboratory control.

Operation of unit (Range Selector Electrobalance) is termed fast and easy, with one-knob control and one dial for weight reading. A twist of selector knob sets balance to any of 6 milligram ranges, from 0-1 to 0-100. Precision at lower ranges is 1 microgram, accuracy is 0.05% of full scale on most ranges.—*Cahn Instrument Co., 14511 Paramount Bldg., Paramount, Calif.*

Circle 145A on Reader Service Card

Movable Walls Cut Relocation Costs Throughout Plant

Offices and production areas may be efficiently enclosed by these easily relocated partitions.

Movable-wall system (Type HP) combines low initial cost with long-term maintenance and relocation savings. Installed by the maker, it consists of full-flush panels of steel and glass. Units are fireproof, sound-resistant, and have single-line joints (no exposed posts).

Panels are supplied for ceiling heights ranging 7 ft. 3 in. to 9 ft. ⅜ in., and in widths of 1-5 ft. Continuous base strips are 10 ft. long.—*E. F. Hauserman Co., 2100 Keith Bldg., Cleveland.*

Circle 145B on Reader Service Card

Trailer Doubles Capacity of Waste-Disposal Unit

Designed for easier handling of detachable waste-disposal containers, this trailer doubles the hauling capacity of the basic unit. Latter is hydraulically powered to pick up, carry, dump, and spot many types of containers holding solids, liquids, or gases.

Trailer (Load Lugger) is loaded by one man. First, the towbar is retracted and dropped. Then with hoist and container backed into position, arms place container on trailer. Next, lift chains are unhooked and container is fastened to trailer by a cable carried over the lifting lugs. Truck pulls ahead and towbar is connected to a pintle hook, ready for the trip.—*Borg-Warner Corp., Ingersoll Kalamazoo Div., 1810 N. Pitcher St., Kalamazoo, Mich.*

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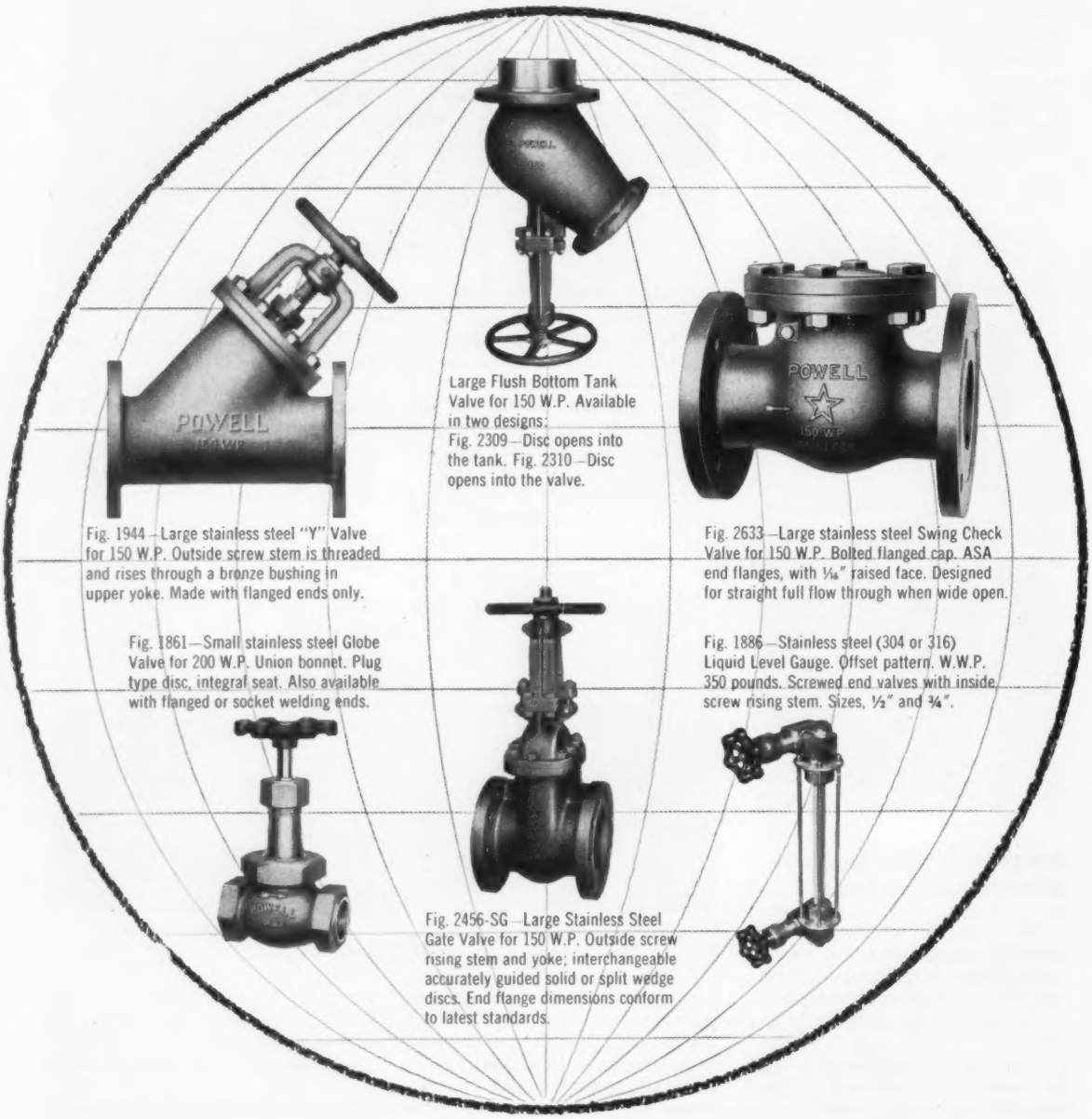
Chemicals p. 156
Briefs p. 156

POWELL

world's largest family of valves



Large Flush Bottom Tank Valve for 150 W.P. Available in two designs: Fig. 2309—Disc opens into the tank. Fig. 2310—Disc opens into the valve.

Fig. 1944—Large stainless steel "Y" Valve for 150 W.P. Outside screw stem is threaded and rises through a bronze bushing in upper yoke. Made with flanged ends only.

Fig. 2633—Large stainless steel Swing Check Valve for 150 W.P. Bolted flanged cap. ASA end flanges, with 1/16" raised face. Designed for straight full flow through when wide open.

Fig. 1861—Small stainless steel Globe Valve for 200 W.P. Union bonnet. Plug type disc, integral seat. Also available with flanged or socket welding ends.

Fig. 1886—Stainless steel (304 or 316) Liquid Level Gauge. Offset pattern. W.W.P. 350 pounds. Screwed end valves with inside screw rising stem. Sizes, ½" and ¾".

Fig. 2456-SG—Large Stainless Steel Gate Valve for 150 W.P. Outside screw rising stem and yoke; interchangeable accurately guided solid or split wedge discs. End flange dimensions conform to latest standards.

A solution for every kind of flow control problem is as near as your local Powell distributor. Powell valves are designed and engineered in the largest variety of metals and alloys, to handle any medium, every flow control requirement. There are Powell distributors in all principal cities. Or, if yours is a special engineering problem, write to:

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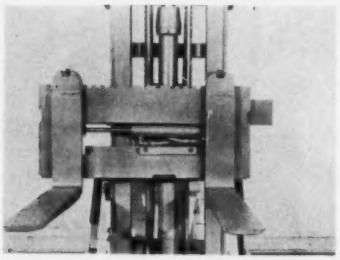

Side-Shift Attachment Ups Fork Truck's Versatility

With this attachment, fork-truck operators can shift loads right or left for accurate warehouse tiering or car-loading without having to maneuver truck into exact position.

Standard model, designed for maker's 2,000-lb.-capacity truck, provides a 3-in. shift. A heavy-duty type, for units with capacities of 3,000-5,000 lb., gives 4-in. shift. Both units accommodate standard forks or other special attachments, and can be used with various types of uprights.—*Clark Equipment Co., Battle Creek, Mich.*

Circle 147A on Reader Service Card

Triple-Duty Cleaning Gun Cuts Labor Costs

Labor savings up to 80% are reported with use of this novel multi-purpose cleaning gun, which employs 6-8 cfm. of air at 100-125 psi.

Weighing less than 3 lb., unit (Kemax) has a special valve arrangement that permits instant switching from solution application to pressure rinse, and to air dry, if desired.

In operation, two lightweight hoses feed water (hot or cold) and compressed air. A ¼-in. hose aspirates the exact amount of solution required. Unit is easy to handle, requiring only one hand.—*Kemax Corp., 9717 S. Luella Ave., Chicago.*

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HUNDREDS OF HOWE

DIAL SCALES

EASIER READING...
ACCURATE...LONGER LIFE

DIAL SCALES make your weighing easier and faster... and Howe has hundreds of standard dial scales on which you can get quick delivery at favorable prices.

And these are the latest, most modern dial scales available. You'll find many unusual features as standard equipment, including Howe's exclusive Tape Drive Dial Mechanism.* Naturally, you can use Howe accessories for printed weight records, remote weight indications, and many other weight control operations.

You probably have an unusual weighing problem—or you may just be interested in finding out about the many new and better dial scale types now available. Either way, contact your local Howe representative or Howe Scale, Rutland, Vt.

*Your Howe representative can explain it in detail, but it's a new and patented design which gives even greater accuracy, longer scale life.

NEW! DIAL SCALE CATALOG. Just out! Illustrated; gives specifications on dozens of standard and special types for industry and agriculture. Send for your free copy now!

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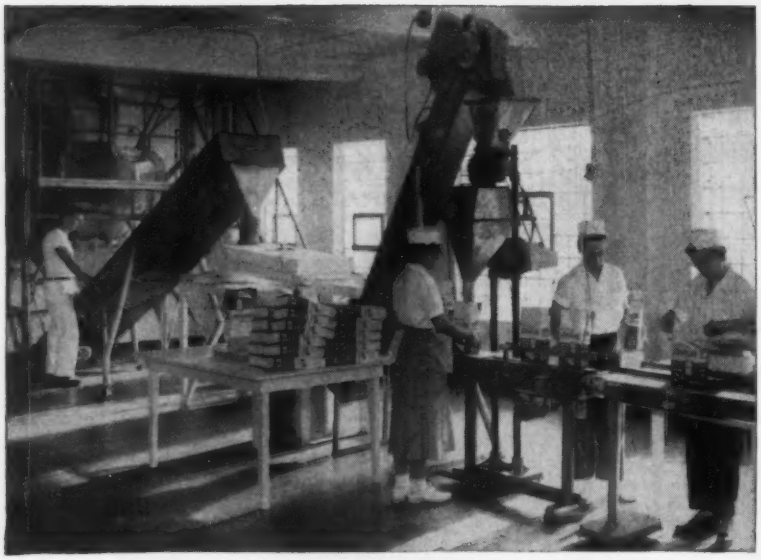

The Instantizing and packaging line at the Farmers Coop Creamery in Ogilvie, Minnesota. Their nonfat product KWIK-LAC is active and successful in the Midwest consumer market.

You don't have to be big to produce instant milk...

But your profits will grow as soon as you go into INSTANT.

Instant milk powder is produced simply and economically with the Blaw-Knox Instantizer. Critical spray drying operations are not necessary to produce an "instant" product. Now, with new advances in the Blaw-Knox Instantizer you can produce a durable powder, free of product deterioration. True instantability with no off-flavor is gained by holding heat, moisture and process time to the minimum.

The Blaw-Knox Instantizer is effective on nonfat milk, chocolate blends, cocoa, and many other products which might require a low bulk density.

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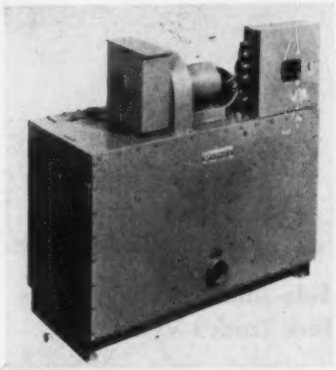


Many Applications Cited For Compact Air-Dryer

Designed for low-humidity storage and processing applications, this silica gel dehumidifier is an automatically regulated dual-tower unit.

In areas up to 35,000 cu. ft., machine (Dryomatic Model 105) maintains humidities down to 10% over a wide temperature range. It also provides low-dew-point air for processing, and can be used either alone or with cooling equipment for comfort conditioning.

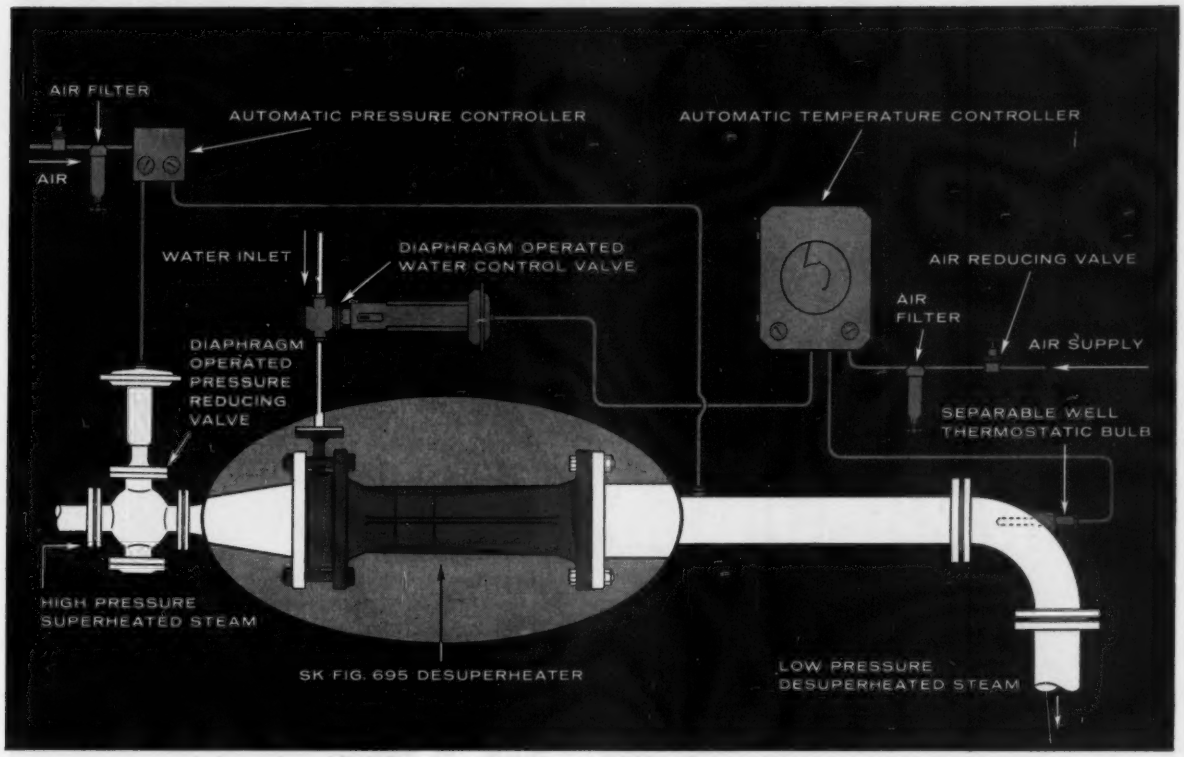
Unit has dry-air output of 100 cfm. and removes 50 lb. of water per 24 hr. Each tower is alternately regenerated by electric heating elements. Assembly measures 40x20x37 in., weighs 320 lb., and operates on 110v.—*Dryomatic Corp., 806 N. Fairfax St., Alexandria, Va.*

Circle 148A on Readers Service Card

High-Capacity Sonic Sifter Makes Fine Separations

Powered by sonic energy, this machine reportedly has five times the capacity of mechanical sifters, yet requires less than one-third the power.

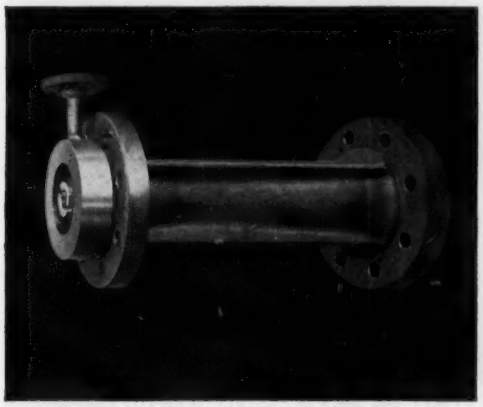
Unit (Novo) makes separations



Reduce Steam Temperature for Process Operations

with this light, easily-controlled Desuperheater

SK Fig. 695 Venturi Type Desuperheater. An important feature of this desuperheater is the fact that the water need not be at higher pressure than the steam entering the desuperheater. As noted in description, right, water can enter the unit at inlet steam pressure.



The SK Venturi Type Desuperheater, shown in the illustrations above and at left, is designed to reduce the temperature of superheated steam to the lower temperatures required for use in process operations and for operating plant auxiliaries.

These Desuperheaters are light in weight and small in dimensions—are supported directly by the superheated steam line. In addition, they are simple in construction, provide straight-through flow with only a small pressure drop. Because these units are designed for application with automatic control, they are particularly well suited for process and petroleum plants where steam flow varies. They can, however, be used without controls where steam flow is steady. In such cases only a separator need be added.

The Venturi Type Desuperheater reduces steam temperature by bringing water into contact with the superheated steam. The water pressure is low since it need only equal the operating steam pressure. The water is preheated in the chamber around the water diffuser and issues, through many small jets, into the steam stream. Since the steam-water mixture is discharged through the desuperheater outlet in a fog-like condition, without contacting the sidewalls, maximum desuperheating effectiveness is obtained and minimum wear occurs in the discharge piping.

The particular desuperheater shown is one of four types made by SK for process plants. Complete details on all types are contained in Bulletin 6D. Write for a copy.

JET APPARATUS: Ask for Condensed Bulletin J-1.
ROTAMETERS & FLOW INDICATORS: Ask for Condensed Bulletin M-1.
VALVES: Ask for Condensed Bulletin V-1.
HEAT TRANSFER APPARATUS: Ask for Condensed Bulletin HT-1.
GEAR PUMPS: Ask for Bulletin 17-A.

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FLAVORS

MAKE FINE FOODS FINER!

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Free samples without obligation.

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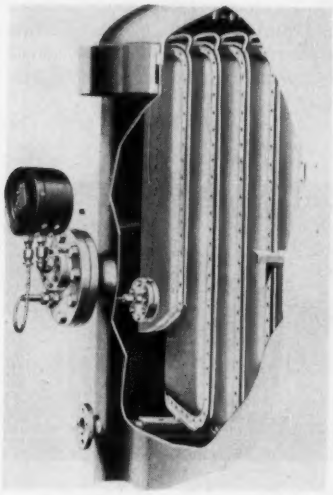
SEE US AT THE I.F.T. CONVENTION, BOOTH 44 AND 45.

down to 30 microns. A typical application is removing dust and 'fines' from coffee, which formerly was considered economically unfeasible.

In operation, low-range sonic energy is transmitted directly to the screen. Superimposed on a fundamental frequency is a series of harmonics (6,000 cps.) that create violent vibratory action with little flexing of screen. Since the mesh is agitated directly, while frame, screen, and support remain stationary, a considerable saving in energy results.

Oscillations radiate across screen from the connecting arms, eliminating dead areas and costly clogging. This is particularly valuable in sifting of hygroscopic materials.—*United Specialties Co., 9705 S. Cottage Grove Ave., Chicago.*

Circle 1488 on Reader Service Card



Cake-Thickness Detector Controls Filtration Cycle

Combined with standard filtration controls for flow, pressure, and clarity, this device reportedly automates pressure-leaf operation. Furthermore, it eliminates need for overdesigning a filter to hold unexpected surges of solids without damage to leaves.

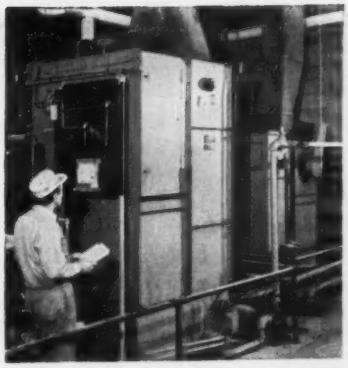
In operation, unit (Cake Thickness Detector) stops filtration when cake reaches maximum allowable thickness, then triggers the next processing step. Or it can sound an alarm if filter is manually controlled.

Here's how detector works: When cake reaches maximum thickness, it contacts a pressure-sensing diaphragm mounted on a tube extending into filter tank. As diaphragm

DRY and CLEAN AIR at the RIGHT TEMPERATURE

- to control your product quality
- to protect a critical operation
- to protect apparatus from moisture damage
- to DRY your material or product
- to control packing or storage conditions
- to assure precision in testing or research
- to increase air conditioning capacity

Air Condition by the NIAGARA Method Using HYGROL Liquid Absorbent



This compact method, giving high capacity in small space, removes moisture from air by contact with a liquid in a small spray chamber. The liquid spray contact temperature and the absorbent concentration, factors that are easily and positively controlled, determine exactly the amount of moisture remaining in the air.

Most effective because... it removes moisture as a separate function from cooling or heating and so gives a precise result, and always. Niagara machines using liquid contact means of drying air have given over 20 years of service. The apparatus is simple, parts are accessible, controls are trustworthy.

Most reliable because... the absorbent is continuously reconcentrated automatically. No moisture-sensitive instruments are required to control your conditions... no solids, salts or solutions of solids are used and there are no corrosive or reactive substances.

Most flexible because... you can obtain any condition at will and hold it as long as you wish in either continuous production, testing or storage.

Write for Bulletins 112 and 131 and complete information on your air conditioning problem.

NIAGARA BLOWER COMPANY

Dept. Fl-5, 405 Lexington Ave., New York 17, N.Y.

Niagara District Engineers in Principal Cities of U. S. and Canada

CY BELT says

"I can eliminate 'time lag' and speed production!"

Too often material in process can go only so far, and then must wait until somebody carries or pushes it to the next stage in the production line. The delay caused by the need for manual handling can frequently be eliminated by a *complete* conveyor system that reduces manual handling to the absolute minimum. Time is saved, unit costs are reduced, and the profit margin is widened. A trained Cyclone salesman can analyze your present materials-handling system to uncover time-wasting procedures, and suggest improvements. His analysis costs nothing, and his recommendation will be tailored to *your* plant and *your* needs. Just fill in the coupon.

Prompt service to belt users is assured by two factories, one in the Middle West and one on the Pacific Coast.

USS Cyclone Metal Conveyor Belts

Spiral Woven • Flat Wire • Flex-Grid

Cyclone Fence Dept.
American Steel & Wire
Division of
USS United States Steel

United States Steel Export Company, New York

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Dept. H-58, Waukegan, Illinois

Please send me, without obligation, your catalog No. 5 on Cyclone Processing Belts.

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Company .....

Address .....

City ..... State .....

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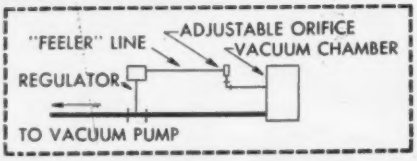
REGULATION
...Fulton Sylphon is your No. 1 source!
Simple! Compact! Powerful! All-metal Fulton Sylphon No. 994 Vacuum Regulator provides superior performance at low cost in low pressure and vacuum service. Dependable, large-size Sylphon® Metal Bellows and tension-compression loading spring assure accurate control and long life. Widely used in food, chemical and pharmaceutical processing. Models available to provide reduced pressures from −14 to +20 psi. National field service . . . complete engineering assistance. Write for Bulletin TP-103-JG.

Typical vacuum regulator application—reverse-acting valve closes when the vacuum increases.



Robertshaw-Fulton CONTROLS COMPANY

FULTON SYLPHON DIVISION
Knoxville 1, Tennessee

Equipment & Supplies

becomes imbedded in cake, hydraulic pressure on its face drops slightly below tank pressure (pressure drop through filter cake). This pressure differential actuates a switch in control or alarm circuits.—*Duriron Co., N. Findlay & Thomas Sts., Dayton, Ohio.*

Circle 151A on Reader Service Card

Flowing Liquids Degassed In 5-Gpm. Ultrasonic Unit

Continuous degassing of flowing liquids is reported with use of new stainless-steel ultrasonic equipment handling up to 5 gpm.

As liquid enters a tank through a top pipe connection, high-energy ultrasonic radiation removes dissolved and occluded gas. Degassed liquid is drawn off at bottom of chamber, just above vibrating transducers. Flow rate for complete degassing depends on liquid viscosity and temperature, thinner ones being degassed faster. —*General Ultrasonics Co., 67 Mulberry St., Hartford, Conn.*

Circle 152A on Reader Service Card

Fruit Stored for 9 Months In New Corrugated Box

This corrugated fruit box reportedly withstands months of cold storage—and still is in excellent condition for long-distance shipments.

Apples so packed have been held at 31F. and 90% R.H. for 9 months, boxes being stacked 10 high. Even with this heavy top load, there were no failures.

Growers have shown keen interest in a corrugated apple box because of its lighter weight, greater protection, and ease of handling. However, high humidity of cold storage areas has been a major problem. This has now been overcome by special box design for greater moisture resistance.

Unit's paper trays position and cushion the fruit, making individual wrapping optional. Cover flaps can

GENTLE... AND FAST

only the Package *Versaaflow-150* gives you both

If your products require the gentlest handling, this Package Versaflow-150 will give you just what you need . . . and over a wide size range. You have straight-through, continuous movement, from infeed to discharge. There are no elevators, no reciprocating motions to upset or damage package contents.

Variable speed drive gives you up to 150 smartly-wrapped packages a minute. A special Versaflow-150 transfer feeds directly from your production line without a direct drive hook-up. The belt infeed receives packages automatically, and feeds them to the chain drive. Sealed ball bearings eliminate maintenance, and centralized lubrication keeps grease fittings away from your packages.

You can wrap with cellophane, wax paper or heat-sealing foil on the Versaflow-150. It handles packages from 6" to 14" long, 3" to 7½" wide, and 1" to 5" high. For full details, contact your Package representative.

PACKAGE MACHINERY COMPANY, EAST LONGMEADOW, MASS.

NEW YORK • PHILADELPHIA • ATLANTA • BOSTON • CLEVELAND • CHICAGO • KANSAS CITY
DALLAS • DENVER • LOS ANGELES • SAN FRANCISCO • SEATTLE • TORONTO • MEXICO CITY

PACKAGE

PMMI

For more data, circle this page number on card at back →

Here is Why!

You can dispense with oil filters and dust filters when you install ®Nash® Clean Air Compressors. You can save the cost of maintaining these devices. You can greatly reduce instrument maintenance costs. For the Nash employs no internal lubrication, therefore no troublesome oil is in the delivered air. Moreover, air from a Nash is thoroughly washed and cooled as it passes thru the pump. Dust in the plant atmosphere, even fly ash, is immediately removed.

®Nash® Clean Air Compressors are simple, with only one moving element. No valves, gears, pistons, sliding vanes, or other enemies of long life and constant performance complicate a Nash. No aftercoolers are needed. You will find it profitable to investigate these pumps, now.

No oil filters.
No dust filters.
No internal lubrication to contaminate air handled.
No internal wearing parts.
No valves, pistons, or vanes.
Non-pulsating pressure.
Original performance constant over a long pump life.
Low maintenance cost.

NASH ENGINEERING COMPANY
395 WILSON, SO. NORWALK, CONN.

be slotted to fold down at the sides while box is being filled.—*Crown Zellerbach Corp., Gaylord Container Div., 111 N. Fourth St., St. Louis.*

Circle 152B on Reader Service Card

For Heat-Sensitive Fluids: Duplex Aluminum Pipe

Primary use of this aluminum duplex pipe is heating of liquids that tend to solidify or become viscous on cooling. Unit carries steam in one line, process liquid in the other.

Available in alloys 3003F or 6063T5, pipe is extruded in four sizes—1¼-, 2-, 3-, and 4-in. It is made in standard 30-ft. lengths, but can be ordered in non-standard lengths from 3-40 ft.—*Reynolds Metals Co., 2500 S. Third St., Louisville, Ky.*

Circle 155A on Reader Service Card

INGREDIENTS

8 Oz. of New Concentrate Makes 1 Gal. of Flavor

Processors can now prepare high-quality food flavors from water-soluble concentrates.

Developed to offset high freight costs, products (Hibco Super Concentrates) save storage space and are said to have excellent baking characteristics. Flavors are prepared simply by diluting 8 oz. of concentrate with water to make 1 gal.—*Hilker & Bletsch Co., 614 W. Hubbard St., Chicago.*

Circle 155B on Reader Service Card

New Emulsifier Ups Quality Of Soft-Serve Ice Cream

Developed especially for frozen dairy products, this liquid mono- and diglyceride emulsifier offers user convenience, blandness, and the extreme dryness required in novelties and soft-serve ice cream.

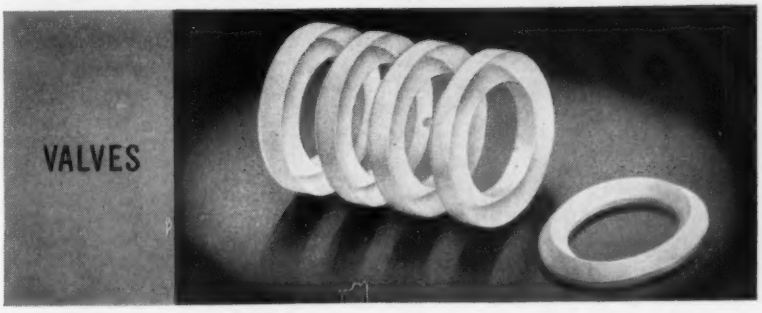
Product (Atmos 300) is used at a level of 0.1% in extruded products, and is applicable to bulk ice cream at 0.06%. Emulsifier can be added

CLEANEST PACKINGS
for food processing

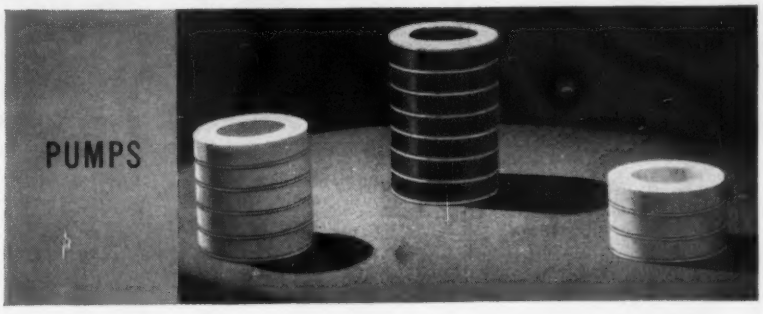
impervious to food acids, alkalies, solvents

tasteless, odorless, non-contaminating

withstand sterilizing temperatures



Chemiseal† Valve Packings, made of du Pont TEFLON, are available in V-type, diagonal, triangular, conical and Garlock Chevron* ring designs. They seal at low gland pressures and reduce torque required to operate the valve. TEFLON's anti-hesive properties guard against "freeze" in a valve even though handling extremely sticky fluids. Supplied in sets to meet specific requirements.



Chemiseal Pump Packings are molded from pure shredded TEFLON with TEFLON suspensoid. Provide a low friction, 2-way seal that not only prevents axial seepage, but seals against shaft and stuffing box as well. Supplied in sets to meet specific requirements. Garlock No. 9167. (Also supplied graphited where contamination is not a factor.)

†U.S.G. trademark
*Garlock trademark

For prompt service, contact one of The Garlock Packing Company's 30 sales offices and warehouses throughout the U.S. and Canada, or write

United States Gasket Company
Camden 1, New Jersey

United States Gasket *Plastics Division of* **GARLOCK**

GARDNER DENVER

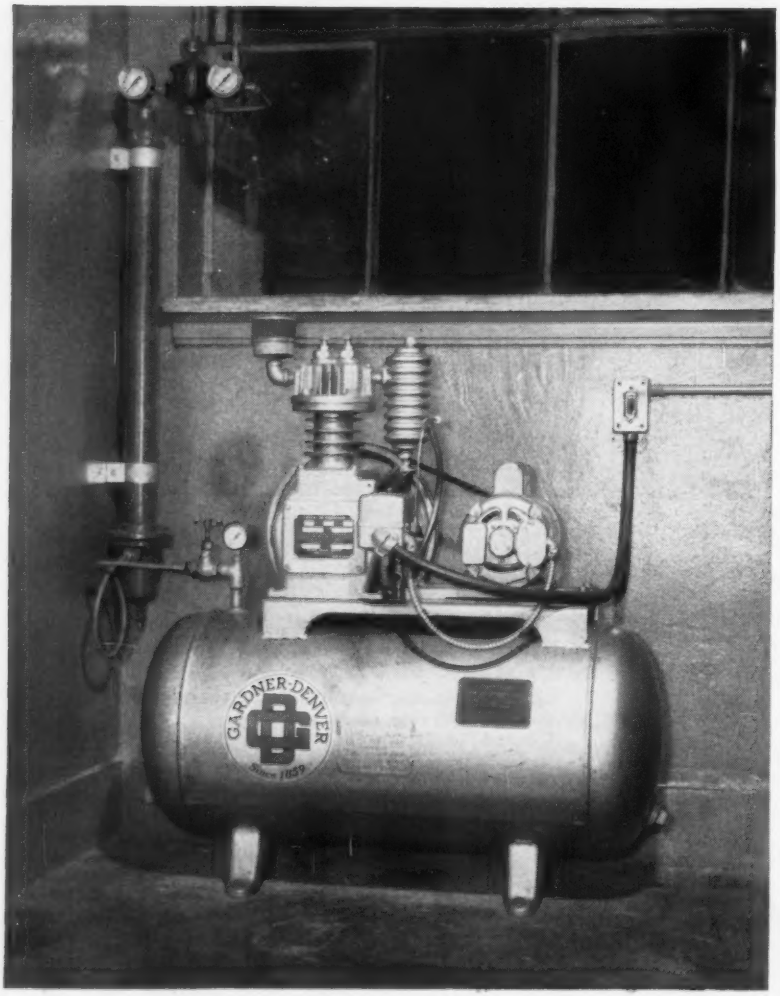
Hook up a small and compact Gardner-Denver CACB compressor and be sure of the pure, oil-free air you need for instrumentation, processing or the manufacture of chemicals.

The CACB uses no oil in the cylinder. Pistons and piston rings are made of self-lubricating carbon—no oil or water lubrication required. This highly efficient compressor supplies four to five cu. ft. of low-cost oil-free air per min., with discharge pressures from 40 to 100 psi. Write for complete information.

Stationary air compressors . . . tank-mounted compressor outfits . . . oil-free air compressors—whatever your compressed air needs, see your Gardner-Denver compressor specialist first. Gardner-Denver Company, Quincy, Illinois.

Low-cost . . . oil-free air

Compact CACB compressor



to mix at any time before freezing and at any desired temperature. No preheating is required and, because of rapid and complete dispersion, its use is recommended in HTST-processed mixes.—*Atlas Powder Co., Wilmington, Del.*

Circle 155C on Reader Service Card

CHEMICALS

Quick-Drying Floor Patch Is Easily Applied, Durable

Easy troweling and up to 40% greater resistance to indentation are advantages cited for a new fast-setting floor patch and crack filler.

Typical applications include: Filling of cracks or gaps in brick, tile, and plaster; patching of concrete, and setting of loose tiles.

Known as Filmix, it is a powdered plastic that dries hard in 1-2 hr. with minimum shrinkage. Product is prepared simply by mixing with water (and dry colors if desired), and applied with trowel or putty knife. Fine work is finished with sandpaper or steel wool.—*Selby, Battersby & Co., 5210 Whitby Ave., Philadelphia.*

Circle 156A on Reader Service Card

BRIEFS

Redesigned Limit Switches have compact enclosures, yet are easily wired. Built-in combination insulator-seal, cemented into bottom half of enclosure, gives superior sealing and high safety factor. Die-cast units (Micro Switches) are available for side mounting (E6) and for bottom mounting (V6). — *Minneapolis-Honeywell Regulator Co., Micro Switch Div., Freeport, Ill.* (156B)

Automatic Pallet Loader operates at 39 cases per min. on conventional 7-case pattern, and at up to 44 per min. with smaller cartons. Self-contained unit (No. 300) has simplified feeder construction enabling gentle handling of fragile packages.—*Alvey Conveyor Mfg. Co., 9301 Olive St. Rd., St. Louis.* (156C)

Package Preheater (600,000 Btu per hr.), employing recirculated hot water, is specially designed for heating viscous and high-solids foods to about 200 F. Compact unit (Com-

pack) has 316-stainless product surfaces and noiseless steam injector that automatically controls water temperature.—*Chicago Stainless Equipment Corp.*, 5001 *Elston Ave., Chicago.* (156D)

Aluminum Produce Box offers unit construction for greater strength. Spring-steel handles can be pulled over top of box for stacking (75% nesting when empty). Dimensions: 16½x25 in. at bottom, 11½ in. deep.—*Mid-West Metallic Products, Inc.* 2108 *Payne Ave., Cleveland.* (157A)

Automatic Pallet Stacker saves floor space, cuts labor costs. Fed by conveyor, it stacks pallets 12-14 high at 2 per min. Companion unit (Pallet Dispenser) automatically releases pallets singly to conveyor or palletizer. Equipment can be operated either by self-contained hydraulic power or by air.—*Standard Conveyor Co., N. St. Paul, Minn.* (157B)

Accurate Belt Weigher measures and controls flow of dry materials at rates to 3,000 lb. per min. Unit (Pneu-Weigh) operates over 10:1 range, which can be converted to 50:1 by vari-speed drive. Accuracy is ±½% at maximum rate.—*Omega Machine Co.*, 345 *Harris Ave., Providence, R. I.* (157C)

Drum-Handling Attachment for lift trucks transports and stacks 5 standard 55-gal. drums at a time. Unit consists of a 130-in.-wide plate with six 3-in.-dia. rams on which drums nest. It can be used on any model of maker's gas- or electric-powered trucks.—*Yale & Towne Mfg. Co.*, 11,000 *Roosevelt Blvd., Philadelphia.* (157D)

Compact Baler-Sealer (two separate devices) automatically package bales ready for shipment. Operated by one man, units (Tol-O-Matic) insert two 25-lb. packages into paper bales, tuck the ends, fold and glue side flaps, and compress the top.—*Tol-O-Matic, Inc.*, 246 *Tenth Ave., S., Minneapolis.* (157E)

Improved Gate Valves, of forged steel, have bolted bonnet design with outside-screw rising stem, solid-wedge disk, and rolled-in seat rings. Fittings are available with screwed or socket-welding ends in sizes ¼-2. in. Ratings are 2,000 psi. at 100F., 800 psi. at 850F.—*The Lunkenheimer Co., Beekman St. at Waverly Ave., Cincinnati.* (157F)

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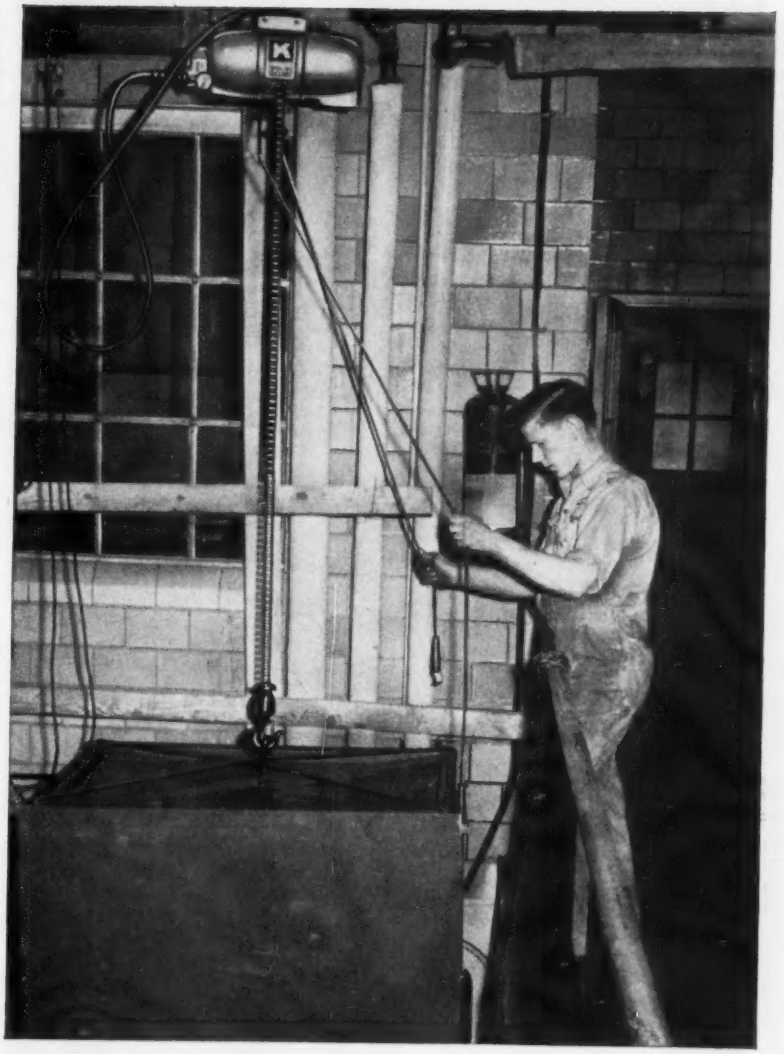

Air hoist saves time

moving loaded meat container

To avoid excessive handling and save time, this plant smokes meats in batches using huge containers. A Keller air hoist provides the quick-stepping lift to move the heavy meat-filled boxes in and out of the smoking room and to the shipping dock.

When you need a lift, remember the Gardner-Denver line of Keller air hoists. They're fast, safe, easy to operate . . . provide accurate control of heaviest loads. Capacities from 150 lb. to two tons. Write for Bulletin 86-1.

ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER-DENVER Since 1859

KELLER TOOLS

GARDNER DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

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SANITILE WALLS
at less than 1/15th the Cost of TILE

Enjoy the sanitary advantages of tiled walls and ceilings for only a few cents a square foot. SANITILE can be applied over cement, plaster, brick or wood by brush, spray or roller. Notice the high-gloss, glass-smooth surface that resists fungus, mold, grease, steam and repeated washings. Imagine the sparkling appearance of your processing rooms and coolers with a ceramic-like SANITILE surface, without joints or crevices to catch contamination and bacteria. Think of the savings over repeated paintings — on maintenance and sanitation costs. Write today for facts.

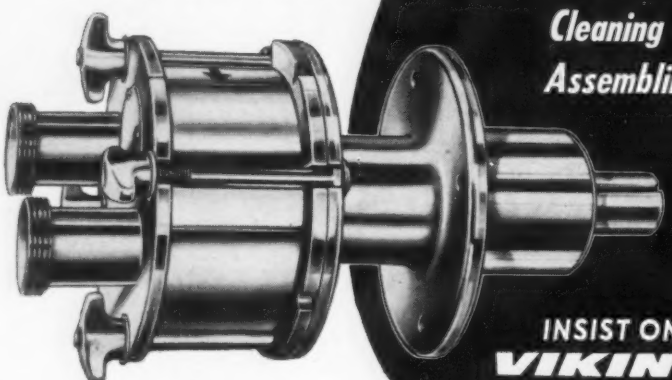
RESISTS
Steam, Condensation, water, acids, alkalies, oils & greases
RESISTS AND PREVENTS
Fungus, mold and bacteria

Serving the food industry since 1913.

MASTER MECHANICS

The MASTER MECHANICS Co., 2097 Columbus Road, Cleveland 13, Ohio
The Master Mechanics Chemical Co. (Canada) Ltd., 88 Richmond St. W., Toronto

FOR FASTEST TAKE-DOWN Cleaning & Assembling



INSIST ON VIKING "Sanitor" Pumps

NOTE THESE ADVANTAGES:
No tools required . . . All dairy-metal construction . . . Simple O-ring gaskets and seal . . . Positive suction . . . Smooth, even discharge . . . Completely sanitary . . . No need to return to factory for repairs . . . 4 sizes and 42 models from which to choose.

MEETS 3A SANITARY STANDARDS

Send today for Catalog FE and SP456E

VIKING — the leader, not a follower, in Rotary Pumps

VIKING PUMP COMPANY
Cedar Falls, Iowa, U.S.A. — In Canada, it's "ROTO-KING" pumps

See Our Catalog in Sweet's Plant Engineers File

Did you breeze right by "Trends & Forecasts," way up front on Page 7? Shift in reverse, go back and take a look. This is one of the most popular, best-read features in your magazine! Management, production, engineers, marketing men eat it up. Yes—"Trends & Forecasts"—Page 7.

Are you in the know, Joe? Do you watch "Developments to Watch"? *It gets a fantastically high score in our reader research every month. Good for job. Good for your reputation, too. Folks have more respect for the man who speaks with quiet confidence on what's ahead. Turn back to Page 13, and try a bite or two. Look for* "Developments to Watch"—Page 13.

Are you a practical man? Are you following the "Practical Ideas" section every issue? Production, maintenance, engineering people go for its "dollars-to-doughnuts" reporting. It's loaded with useful ideas. Just one good one will pay for your Food Engineering subscription for life, and then some. Read "Practical Ideas."

A New Star is Born

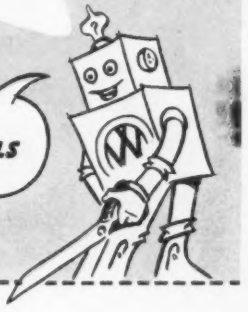
The WOODMAN ECONO-WEIGH

A table model net weigher

1 ACCURATE . . . up to 1/32 ounce average weight variation!

2 FAST . . . up to 25 fills per minute!

3 SENSIBLY PRICED!



The WOODMAN Company, Inc.

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Please send bulletins on WOODMAN equipment for packaging efficiency as marked.

Unit Feeders ☐ Net Weighers ☐
Bag and Package Fillers ☐ Heat Sealers ☐ Staplers ☐
Conveyors ☐ Accumulating Tables ☐

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Company _____
Address _____

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H. P. Hood and Sons to Lily-Tulip:

"Your plastic-lidded container is clearly made to sell our premium grade ice cream at a premium price."

The "Coronet" package combination of see-through translucency and rich design is displayed by Mr. P. B. Eaton, Advertising Services Manager and Mr. L. A. Peters, Package Designer of H. P. Hood and Sons, Charlestown, Massachusetts.

Before "Coronet" ice cream was introduced last year, Hood's marketing team worked up a "must" list for this quality product's package. They wanted a package that measured up to food-sales demands in supermarkets, drug stores, and independent groceries...a package that said in no uncertain terms, that it contained a product well worth the premium price...a "selling" package that also provided full protection against handling and spoilage, was adaptable to automatic filling and capping...and all this at the right cost.

Hood discussed the requirements with Lily-Tulip and this world-famous packaging supplier produced the answer: a plastic-coated paper container with a tough, translucent molded styrene snap-over lid. Let's check it against Hood's "musts." 1) When the shopper looks down at this package, she has a clear, compelling view of a product that, surveys show us, sells itself 40% of the time by impulse! 2) This package permits wide design latitude and brilliant colors, with sharply printed trademarks and messages. Here is a "different" package, impressive, "expensive-looking." 3) This package can stand the shock of freezing, shipment, and handling. Its molded cover makes an airtight seal, yet comes off cleanly and readily in the home. It can be filled and capped automatically. And its cost is in line with the job it must do.

What package will do the most powerful selling job for your product...at the least cost? The plastic package molder can offer valuable assistance in answering these questions. His analyses of sales and cost requirements are based on long experience in marketing. His package design services are both practical and imaginative. His productive facilities can supply molded packages by the hundreds or millions, in the most effective size, shape, or strength, and at the right price.

Talk over your packaging plans with a qualified plastics package molder. Marketers in many fields have—with gratifying results...and profit.

Modern food merchandising at realistic prices can easily be accomplished through the available package designs provided by the plastics package molder. Lily-Tulip Cup Corporation molds all-plastic packages and a full line of plastic lids for Lily paper containers designed for many food products including dairy items, salads, seafoods and meats. There are many stock designs to choose from as well as custom designs to meet individual packager's requirements.

A complete range of customer services including package research, design and printing is offered to Lily-Tulip customers.

Monsanto supplies a large variety of Lustrex styrene molding compounds to America's leading molders of plastics packaging.*

Monsanto

* LUSTREX: REG. U.S. PAT. OFFICE

Van body mounted on Dodge 500 chassis with Custom cab.

Dodge Heavy-Duty Finance Plan is designed to save you money!

Need a new truck, but need to watch your working capital, too? The Dodge retail finance plan for heavy-duty trucks was designed for just that situation. It lets you operate modern, efficient trucks without burdening yourself with excessive finance charges.

Designed with the same understanding of truck problems that has made Dodge *Power Giants* outstanding, the Dodge Heavy-Duty Retail Finance Plan is tailored to your needs. Whether you need one truck or several, you can finance your purchase with a minimum down payment, and with lowest financing cost. Payments can be arranged over an extended period.

What kind of equipment can be financed with this plan? Any Dodge medium-duty, heavy-duty (400 through 900 models) or four-wheel-drive trucks, plus extra equipment, including bodies mounted on the trucks.

This new plan makes it both easy and economical for you to get *Power-Giant* advantages: exclusive Power-Dome V-8 engines that keep maintenance at a minimum . . . rugged "Job-Rated" construction . . . famous Dodge economy and dependability . . . advanced Dodge styling.

Let your Dodge truck dealer show you how this Heavy-Duty Retail Finance Plan helps truck operators with established credit own thrifty new Dodge *Power Giants*. See your dealer soon.

DODGE *Power Giants*

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JUST OFF THE PRESS

PLANT ENGINEERING

Cooling Towers

Concerns company's full line of counter flow cooling towers. Diagrams, cross section views, and details show construction and mechanical features. 14p.—*J. F. Pritchard & Co., Kansas City, Mo. (163A)*

Magnetic Drives

Describes magnetic drive consisting of two basic component—a magnetic rotor and a bi-metallic rotor. 8p.—*Whitney Chain Co., Hartford, Conn. (163B)*

Fittings and Flanges

Summarizes and correlates various code specifications. An aid in computing minimum safety requirements for designing of a pressure piping system. 47p.—*Tubular Products Div., The Babcox & Wilcox Co., Milwaukee. (163C)*

Induction Motor

Describes synchronous induction motor built in same frame size as standard motor of equal horsepower in ratings from 1 to 100. 7p.—*The Louis Allis Co., Milwaukee. (163D)*

Vacuum Pumps

Describes steam-driven and wet vacuum pumps. 2p each—*American Marsh Pumps, Inc., Battle Creek, Mich. (163E)*

Steam Traps

Details line of impulse steam traps typical installation data, 8p.—*Yarnall-Waring Co., Philadelphia. (163F)*

Demineralization

Deals with application of demineralizers, principles of operation, chemistry of ion exchange resins, materials of construction and design of component parts. 29p.—*Graver Water Conditioning Co., N.Y.C. (163G)*

Condenser

Details on remote air-cooled condenser. 5p.—*Keamer Trenton Co., Trenton, N. J. (163H)*

Can Machines

Illustrates different models in line of can making and closing machinery.—*Callahan Can Mch. Co., Proctor, Vt. (163I)*

Valves

Details gate type high vacuum valves, available in manual and air operated forms. 2p.—*F. J. Stokes Corp., Philadelphia (163J)*

Busway

Describes new 225-1000 amp. plug-in busway with aluminum conductors, available in 3- and 4-pole construction for 3-wire, 3-phase, or 4-wire, 3-phase applications. 24p.—*General Electric Co., Plainville, Conn. (163K)*

Compressors

Non-lubricated compressors for use where air or gas must not contact oil or other lubricants. 2p.—*Ingersoll-Rand, N.Y.C. (163L)*

Polymethanes

Brochure describes insulating foams made by mixing two liquids in cavity walls. 10p.—*Amer. Latex Products Co., Los Angeles, Calif. (163M)*

Pressure Gages

Catalog illustrates gages for air, gas, vapors and liquids with ranges from 15 to 20,000 psi. Contains complete engineering data and selection tables for applications in processing plant and power instrumentation. 48p.—*Kunkle Valve Co., Fort Wayne, Ind. (163N)*

Piping Systems

Covers construction features of prefabricated, insulated piping systems for steam, hot water, oil or refrigeration distribution lines.—*RecwiL, Inc., Barnerton, Ohio (163O)*

Speed Drives

Describes line of variable speed drives, with applications photos and selection information. 7p.—*Sterling Electric Motors, Cincinnati. (163P)*

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Air Conditioning

Features automatic filter section and its application to heating and ventilating units, industrial heaters, air conditioners. 11p.—*American Air Filter Co., Inc., Louisville, Ky. (163Q)*

Package Boiler

Fact sheet describes lighter, low cost, packaged automatic boiler. 2p.—*Orr & Sembower, Inc., Reading, Pa. (163R)*

Regulator Tube

Describes new, glow-discharge, voltage-regulator tube of the 7-pin miniature type. 2p.—*Electron Tube Div., Radio Corp. of America, Harrison, N. J. (163S)*

Refrigerant Recirculator

Describes pressurized plants that feed liquid refrigerants to evaporators at constant pressures up to 75 psig. Contains diagrams and charts. 4p.—*J. E. Watkins Co., Maywood, Ill. (163T)*

Cooling Towers

Describes line of propeller fan cooling towers. Gives complete rating data for proper selection under varying conditions. 8p.—*Halstead & Mitchell, Pittsburgh. (163U)*

PROCESSING

Dicing Machine

Describes German-made machine that will cut large variety of fresh, cooked or semi-frozen food into perfect cubes. Capacity up to 3,000 lb. per hr.—*Koch Equipment Co., Kansas City, Mo. (163V)*

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Describes new sanitary design ribbon blenders for powders, granulars, pastes or liquids, 4p.—*The Falcon Mfg. Div., First Machinery Corp., Brooklyn (163W)*

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Brochure covers important jobs industrial gases do for food industry. Information on sources and properties, selection and handling techniques. 24p.—*Air Reduction Co., Inc., N.Y.C. (163X)*

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Describes new rotating field permanent magnet separators. 2p.—*Carpco Mfg., Inc., Jacksonville, Fla. (163Y)*

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Gives complete information on new line of dairy storage tanks. 8p.—*Cherry-Burrell Corp., Chicago. (163AC)*

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Dictionary describes machines and units used in solving processing problems. 4p.—*Sprout, Waldon & Co., Muncy, Pa. (163AE)*

Flowmeters

Technical information on selection of flowmeters for measuring a given fluid or liquid. 4p.—*Fischer & Porter Co., Hatboro, Pa. (163AF)*

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Describes unit for continuous weighing of dry materials. 2p.—*Omega Machine Co., Providence, R. I. (163AG)*

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Booklet describing a new unit combination cooler and pasteurizer. 4p.—*Island Equipment Corp., Miami, Fla. (163AH)*

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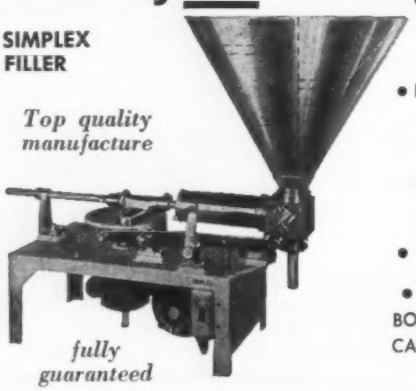

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Rotary Fillers

Describes company's new line of high-speed units for packaging of liquids and viscous products. 4p.—*Girdler Process Equipment Div., Nat'l Cylinder Gas Co., Louisville, Ky. (164A)*

Aerosol Fillers

Contains details on 15-head rotary gassing machine that handles up to 120 cpm. 6p.—*Alpha Engineering Works, Inc., Mt. Prospect, Ill. (164B)*

Printing Process

Describes new eye appeal for packaging made possible by mechanized screen process printing. 4p.—*Color Reproductions, Inc., Union, N. J. (164C)*

Foil Containers

Booklet illustrates and describes wide range of rigid aluminum foil containers and covers for food products. 10p.—*Kaiser Aluminum & Chemical Sales, Inc., Chicago. (164D)*

Macaroni Labels

Technical report discusses new labeling requirements established by FDA to become effective July 1st. 3p.—*Sterwin Chemicals, Inc., N.Y.C. (164E)*

SANITATION & MAINTENANCE

Parts Washer

Describes a washer for sanitary parts and fittings. 4p.—*Girton Mfg. Co., Millville, Pa. (164F)*

Floor-Maintenance

Lists of floor-maintenance equipment and supplies. 4p.—*Finnell System, Inc., Elkhart, Ind. (164G)*

Pipe Benders

Illustrated booklet describes three types of bending—rotary, ram, and roll—with pointers on their uses. 34p.—*Wallace Supplies Mfg. Co., Chicago. (164H)*

Welding Torch Chart

2-color chart illustrates appropriate welding and cutting tips for company's new torch. 2p.—*Harris Calorific Co., Cleveland. (164I)*

Epoxy Finishes

Describes chemical and physical properties of various epoxy finishes. 4p.—*Hauger-Beegle Assoc., Inc., Chicago. (164J)*

Pipe Insulation

Covers one piece welded pipe insulation of fine glass fibers. 8p.—*Gustin-Bacon Mfg. Co., Kansas City, Mo. (164K)*

Molded Cups

Details latest types of molded cups for pump pistons, hydraulic service and pneumatic equipment. 5p.—*The Garlock Packing Co., Palmyra, N. Y. (164L)*

Teflon Couplings

Data sheets on line of machined flexible couplings and expansion joints. 1p.—*Sentinel Glass Co., Hatboro, Pa. (164M)*

Conveyor Lubrication

Points out correct results to be expected of conveyor lubrication. 4p.—*Oakite Products, Inc., N.Y.C. (164N)*

Insulation

Gives characteristics and specifications of high temperature spun mineral wool insulating materials. 6p.—*Baldwin-Hill Co., Trenton, N. J. (164O)*

Surfacing

Describes Monile copolymerized floor surfacing that has unusual adherence and chemical resistance. 8p.—*The Master Mechanics Co., Cleveland. (164P)*

INSTRUMENTS

Ripening Controls

Description of banana and tomato ripening controls with illustration and diagram. 1p.—*Industrial Div. Minneapolis-Honeywell Regulator Co., Philadelphia. (164Q)*

Limit Switches

Describes small-size, 2-circuit, switches for unusually large electrical loads. 4p.—*Micro Switch, Freeport, Ill. (164R)*

X-Ray Analysis

Covers theory of X-ray analysis and diagramatically illustrates basic differences between film diffraction, diffractometry and spectrography. 12p.—*Instruments Div., Philips Electronics, Inc., Mt. Vernon, N. Y. (164S)*

Strip-Chart Receiver

Concerns new multiple-printing strip-chart, that prints up to 16 separate records from as many telemetering transmission centers. *Bulletin M1710—The Bristol Co., Waterbury, Conn. (164T)*

Infrared Instruments

Describes and illustrates infrared spectrophotometers for routine

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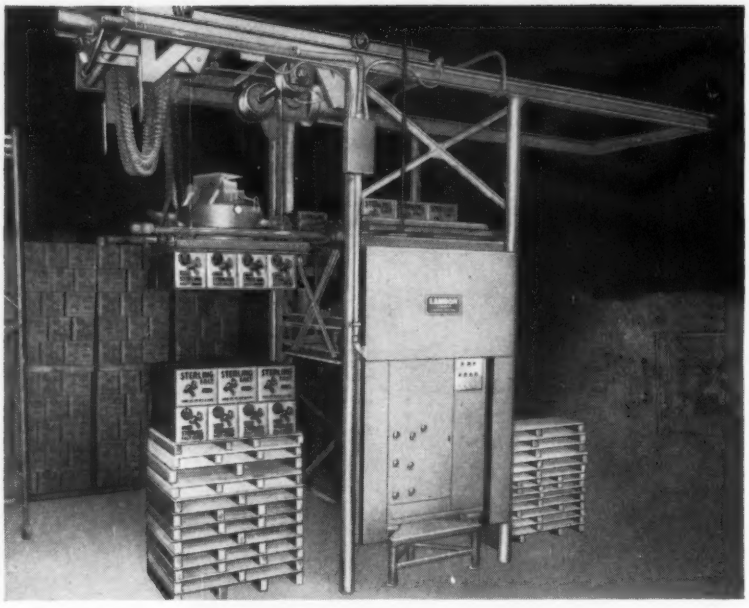

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Attaches to all standard wrapping, bag-making machines

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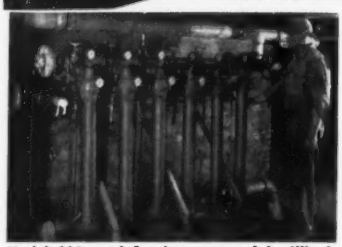

Model 206 used for iron removal in Illinois plant. Note ease of blow down.

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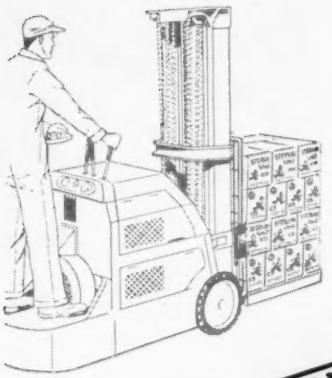

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laboratory analysis. 6p.—*Beckman/Scientific Instruments Div., Fullerton, Calif. (167A)*

Thermometers

Describes line of industrial recording and indicating thermometers with either electric or spring-driven chart drives. 4p.—*The Partlow Corp., New Hartford, N. Y. (167B)*

MATERIALS HANDLING

Pallets

Technical guide for preventing damage to wooden pallets and for assisting in maintenance of damaged ones. 15p.—*National Wooden Pallet Mfrs. Assn., Washington (167E)*

Handling Problems

Field reports, present 20 materials handling problems and their solutions.—*Speedways Conveyors, Inc., Buffalo, N. Y. (167F)*

Nestaway System

Describes system that offers lowest handling costs for delivery of baked goods from wrapper to consumer. 6p.—*Mid-West Metallic Products Inc., Cleveland. (167G)*

Conveyors

Details on rugged, lightweight line of aluminum wheel and roller conveyors. 2p.—*The E. W. Buschman Co., Cincinnati. (167H)*

Gripper Slings

Gives general description of slings and illustrates advantages in their use. 21p.—*Cambridge Wire Cloth Co., Cambridge, Md. (167I)*

Pallet Boxes

Illustrated brochure showing wire-bound pallet boxes used in industry and agriculture. 8p.—*Wirebound Box Mfg. Assn., Chicago. (167J)*

Storage Racks

Data on new racks to save space and make easy handling.—*The Rapids-Standard Co., Grand Rapids, Mich. (167K)*

Signalling Controller

Discusses unit for controlling electrolytic conductivity in process streams. 2p.—*Leeds & Northrup Co., Philadelphia. (167C)*

Temperature Controls

Describes nine temperature controls for industrial uses, with temperature and current ratings given for each. 4p.—*Fenwal Inc., Ashland, Mass. (167D)*

MANAGEMENT

Punch Card Reader

Describes new punched card reader for automatic control of blending, batching and proportioning. 2p.—*Richardson Scale Co., Clifton, N. J. (167L)*

Training Program

Offers in-plant training program for bottle-washing, comprising posters, charts and guide.—*The Diversey Corp., Chicago (167M)*

Promotion & Merchandising

New guide points up need for vigorous, aggressive promotion and merchandising in today's competitive economy. 11p.—*Allen Hollander Co., Inc., N.Y.C. (167N)*

QUALITY CONTROL

Valves, Filters

Technical data and description of needle valves and micron filters. Has section on accessories for special design problems. 11p.—*Hoke, Inc., Englewood, N. J. (167O)*

Pyroceram

Describes pyroceram 9606 and 9608, crystalline materials made from glass. Gives properties and design considerations. Progress Report 2, 6p.—*Corning Glass Works, Corning, N. Y. (167P)*

Electrostatic Separator

Data sheet on laboratory model electrostatic separator. — *Carpco Mfg. Inc., Jacksonville, Fla. (167Q)*

SUPPLIES

Food Color

Hints to candy manufacturer on how to get more for his food color dollar. 5p.—*Sterwin Chemicals Inc., N.Y.C. (167R)*

Price List

New price list and catalog of essential oils, aromatic chemicals, flavor and perfume bases, dry soluble seasonings. 36p.—*Dodge & Olcott, Inc., N.Y.C. (167S)*

Uniforms

Illustrates and describes over 250 styles and colors of washable uniforms.—*Angelica Uniform Co., N.Y.C. (167T)*

Insulated Clothing

Revised catalog on newest types of protective insulated clothing for freezer wear. 14 p.—*Freezer Clothing Sales Co., Silver Springs, Md. (167U)*

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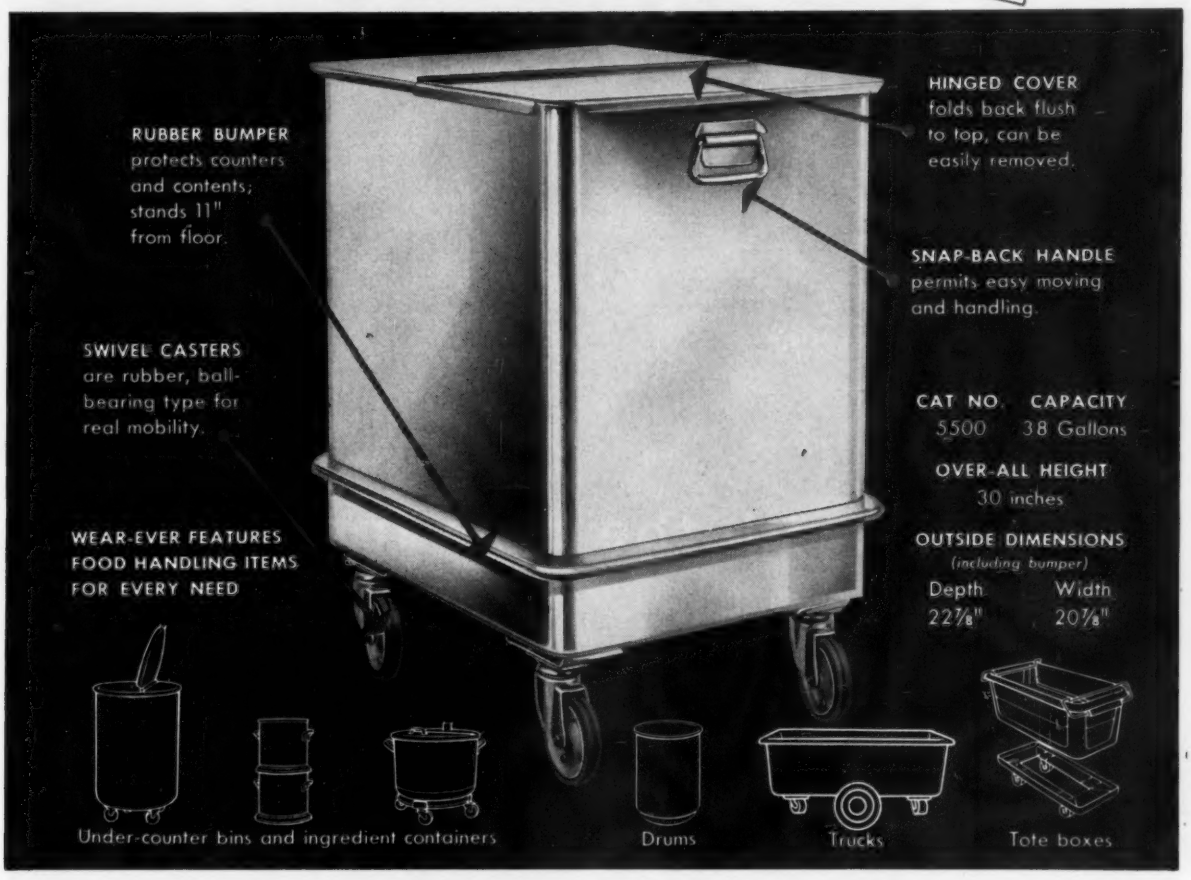

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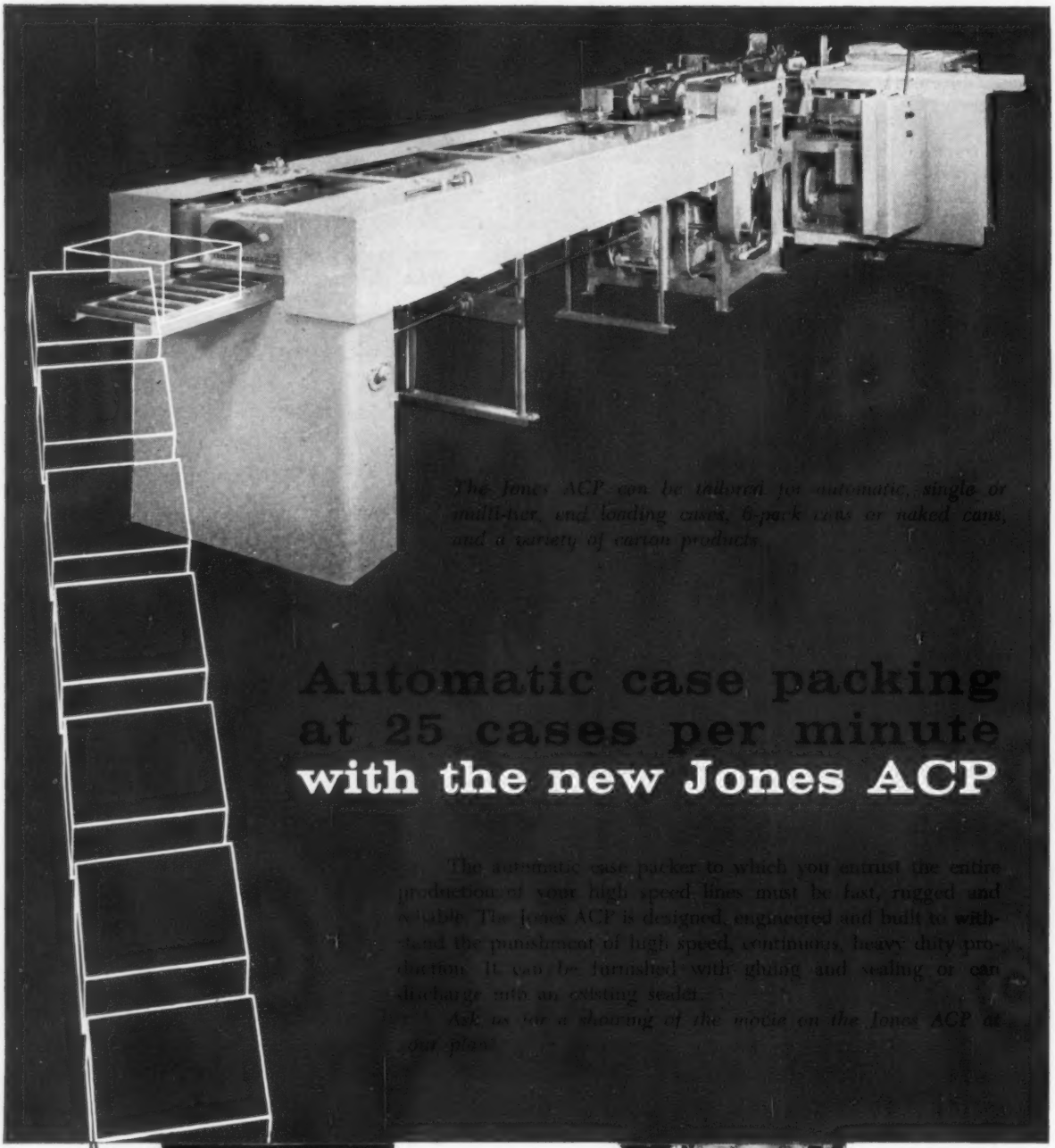

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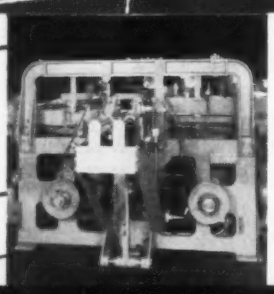

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MANAGEMENT IN A RAPIDLY CHANGING ECONOMY *Edited by Dan H. Fenn, Jr. Published by McGraw-Hill Book Co., 330 W. 42nd St., New York City 36. 1958. 339 pages. Price:* $5.

What shifts in consumer spending are on the way?

What new plans is Labor preparing?

These are just a few of the questions of vital interest to modern management discussed in this timely and informative book. A carefully edited version of the materials presented at the Harvard Business School's 27th National Business Conference, it points the way to better planning by top management.

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This lavishly illustrated book is directed at supplying Junior with a view of the food industry's importance—past, present, and future.

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Booklets & Reports

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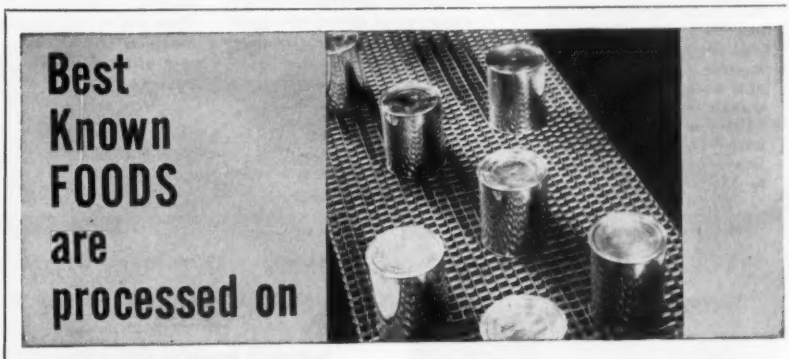
FARM-TO-RETAIL PRICE SPREADS FOR FOODS ANALYZED. *(Publication No. 741). Published by U.S. Dept. of Agriculture, Washington, D. C. No charge.* Price trends since 1913 analyzed and explained.

THE FOOD YOU EAT AND HEART DISEASE *(Public Health Service Publication No. 537). Published by U.S. Dept. of Health Education & Welfare, Washington 25, D. C. 11 pages. Price:* $5 per 100. Booklet outlines facts established by research.

CASE STUDIES IN PRODUCTION FORECASTING, PLANNING AND CONTROL. *(Manufacturing Series 233.) Published by American Management Association, 1515 Broadway, New York City 36. 1957. 90 pages. Price:* $1.75. Three companies report in detail on their practical approaches to the problems forecasting, planning and control.



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because *this endless belt, that gives endless service,* protects product flavor and uniformity in Canning, Freezing, Pickling and Dehydrating. Besides, the OPEN MESH feature facilitates sterilizing with steam gun or scalding water, provides for fast drainage as well as circulation of air, liquids, heat and cold around products in process. Cuts costs in packaging and shipping, too.

Made from Galvanized Strip Steel ⅜" by .047, assembled with Galvanized Cross wire. Available in 3 standard open mesh sizes: ½" x ½", ½" x 1", 1" x 1", in any length and practically any width. (Stock widths 12", 18", 24", 30".)

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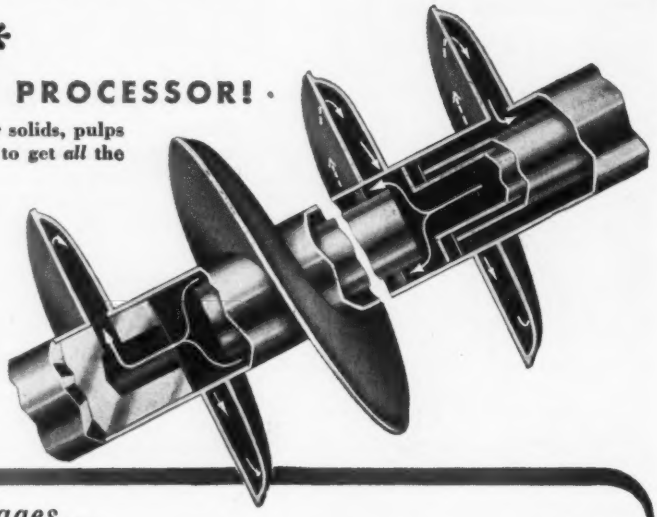

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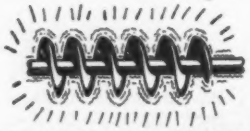
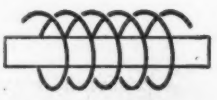
typical HOLO-FLITE *advantages...*

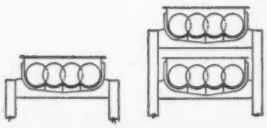
ITS APPLICATION FLEXIBILITY is almost unlimited. It cools, heats, or dries. It handles granular solids, pulps, pastes, slurries and fluids with equal ease. Its heat transfer agent can be water, refrigerant, hot oil, Dowtherm, steam or other liquids or vapors at any of a wide range of temperatures. It cools materials in ranges from 1800°F to 0°F. It heats and dries with hot oil to 600°F...with Dowtherm to 750°F...with steam to 150 lbs. per sq. in. pressure.



THE LARGE HEAT-TRANSFER SURFACE saves space — HOLO-FLITE requires as little as 1/5th the space of other heat-exchange equipment of comparable capacity. Moreover, a more complete heat transfer is effected, resulting in more uniform processing.



ROTATION IS SLOW — granular and powdered solids are handled with practically no dusting — negligible abrasion. There are no dust recovery problems — a further saving in installation, maintenance and operating costs!



ITS OPERATING CAPACITY is readily adaptable to virtually any requirements by simply varying the diameter, pitch, and length of flights, as well as the number of "tiers." Multi-tier units require no more floor space than single-tier installations!

Send for a Free 8 Page Bulletin which gives further time, space and money-saving details on Holo-Flite installation and operating advantages!

*T.M. Reg. (HOLO-FLITE)

HOW HOLO-FLITE WORKS...

Basically the HOLO-FLITE consists of one or more flights of hollow-bladed screw conveyors. The product to be processed moves through a trough housing the conveyor screws. The heat-transfer fluid circulates through the hollow blades and shafts of the conveyor. The product is constantly rotated into, around, under and over the blades and shafts through which the heat-transfer fluid is circulating, assuring quick, uniform heat passage between the two mediums — *as the product is continuously moved along in a bulk-flow without interruptions!*

There are many money and time-saving applications for the Holo-Flite wherever products are cooled, dried, heated or even calcined. Let our engineers study your *particular* problem and make helpful recommendations. No obligation, of course!

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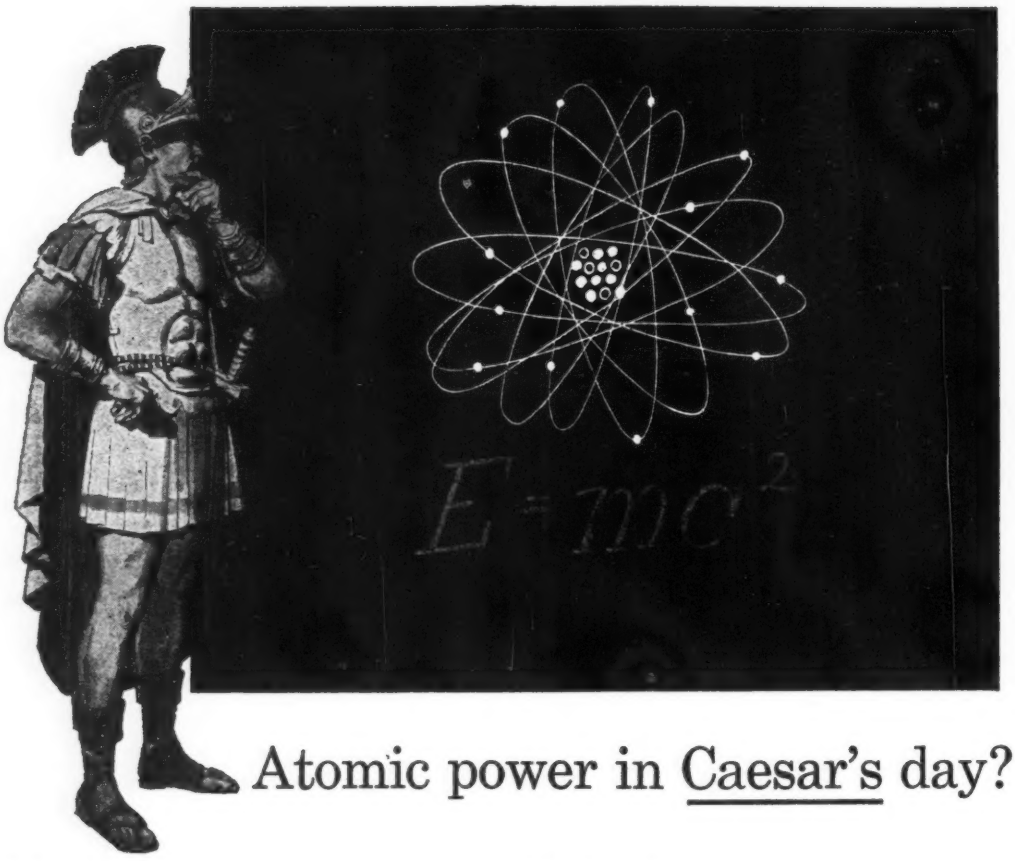

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Certainly!

It was there, in the ground, in the air and water. It always had been. There are no more "raw materials" today than there were when Rome ruled the world.

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The crisis that confronts our colleges today threatens to weaken seriously their ability to produce the kind of graduates who can assimilate and carry forward our rich heritage of learning.

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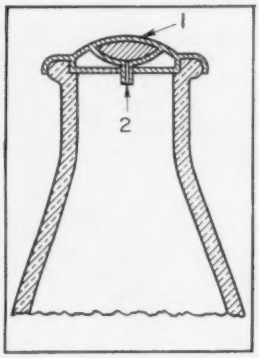

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Free-Flowing Pulverized Sugar Made by Mixing Sticky Powder With Pre-Gelatinized Starch, Heating, Grinding—Fries & Fries, Inc., Cincinnati. No. 2,818,356.

Cereal Flour Containing Fraction From Non-Cotyledonous Raw Leguminous Seeds, Aqueous Extract Thereof—British Soya Products Ltd., London, England. No. 2,819,168.

Margarine Employing Lactone as Flavor Agent—Lever Bros. Co., N.Y.C. No. 2,819,169.

Macaroni Products Made With Cereal Germ Flakes to Up Biological Value—F. Grandel, Inningen, Germany. No. 2,819,969.

Dry Gelatin Mix (Cold-Water Soluble) Comprising Amorphous Gelatin Coated With Dispersant — General Foods Corp., White Plains, N. Y. Nos. 2,819,970, 971.

Liver Loaf Prepared by Forming Layer of Ground Pork Liver and Loin on Unrendered Animal-Fat Strips, Pressure Cooking, Baking—S. Schieber, Chicago. No. 2,824,003.

Low-Sugar Gels Made by Dissolving Pectinic Acid in Buffered Water, Adding Product to Be Gelled, Adjusting pH—H. T. Leo and C. C. Taylor, Anaheim, Calif. No. 2,824,007.

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Compressed Cereal Bar Comprising Sugar-Coated Processed Cereal, Non-Fat Milk Solids, Shortening—USA. No. 2,824,806.

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Extracting Aromatic Oils and Fats From Vegetable Cells by Mixing With Water, Grinding, Fractionating the Extract—L. M. Romagnan, Nice, France. No. 2,817,591.

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Stabilizing Evaporated Milk Against Storage Gelation by Heating to 264-285F., Holding for 70 Sec., Cooling to 210F., Homogenizing Cooling to 70F. —Carnation Co., Los Angeles. No. 2,822,277.

EQUIPMENT

Seafood-Processing Unit, Employing Abraiding Disk, Spaced Shaft With Knurled Surface, Guide Means—M. M. Martinez, New Orleans. No. 2,816,319.

Meat Perforator Having Piercing Elements on Crosshead Mounted in Reciprocating Frame Above Bed Plate—Griffith Laboratories, Inc., Chicago. No. 2,816,320.

Plunger-Type Hardness Tester for Produce — T. E. Hayes, Washington, D. C. No. 2,816,439.

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Figure Mold for Frozen Suckers Consisting of One-Piece Unit With Flexible Cylinders —H. L. Baker, Kansas City, Mo. No. 2,819,690.

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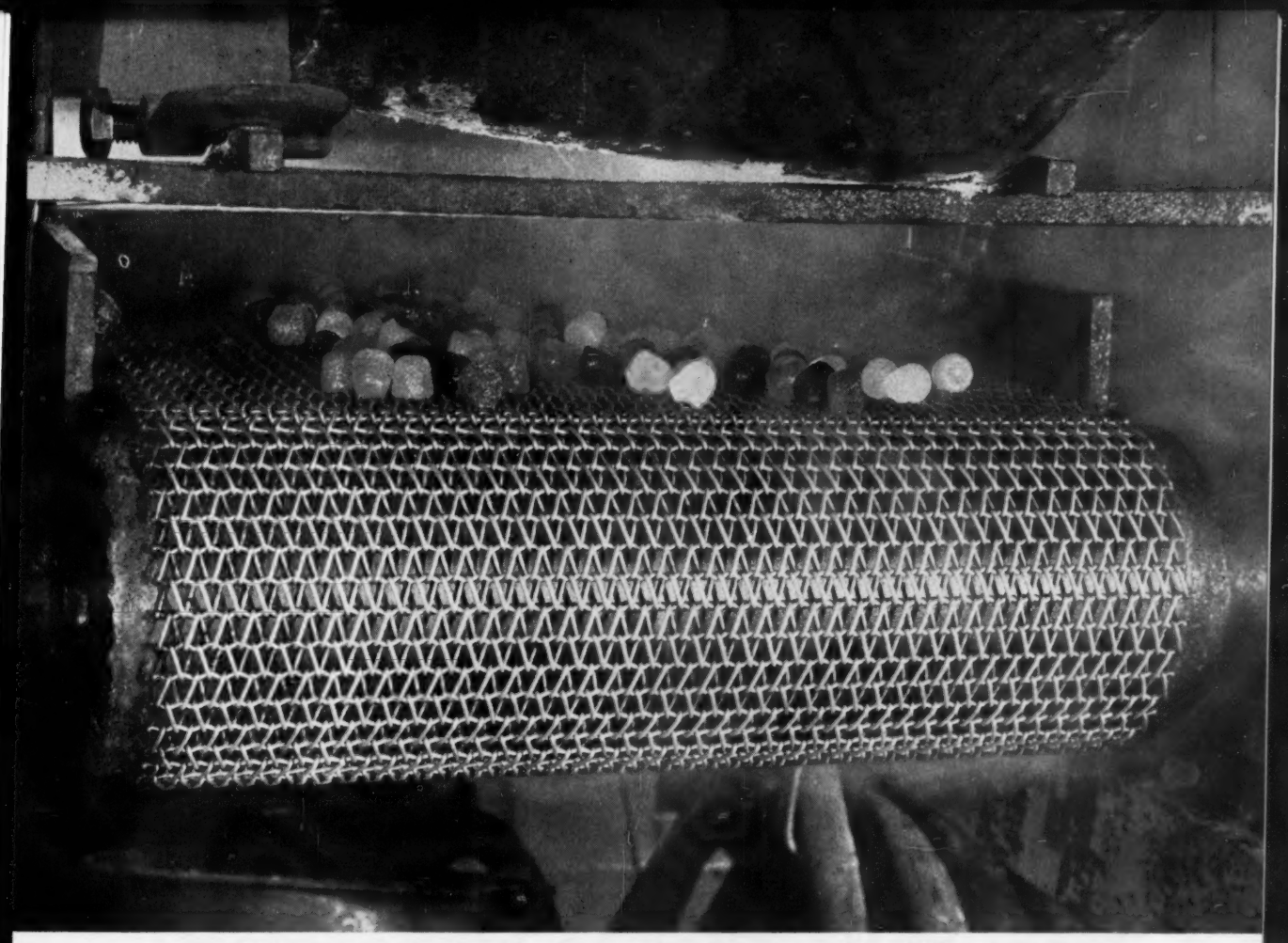
Confectionery Unit, for Feeding Pleated Cups From Stack, Employing Mandrel, Friction Finger, Receiving Platform, Loading Station—C. H. Mayer, Jr., Wilmette, Ill. No. 2,822,651.



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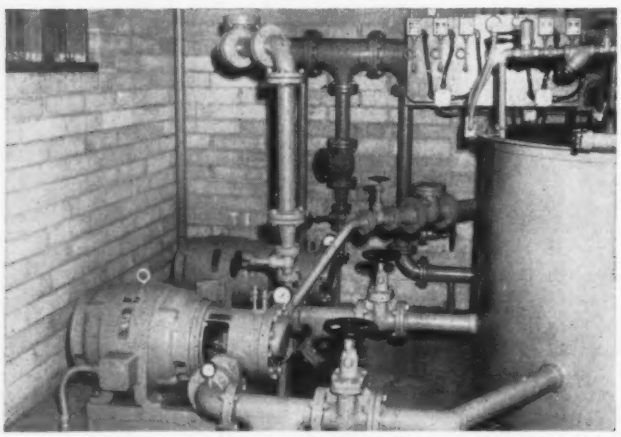

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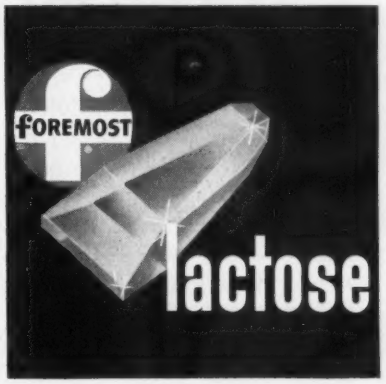

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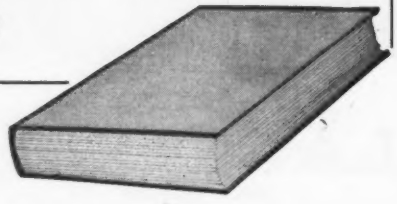

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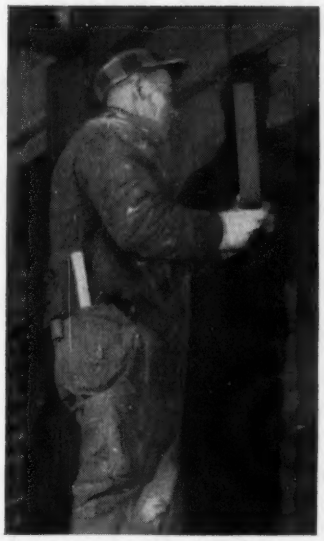
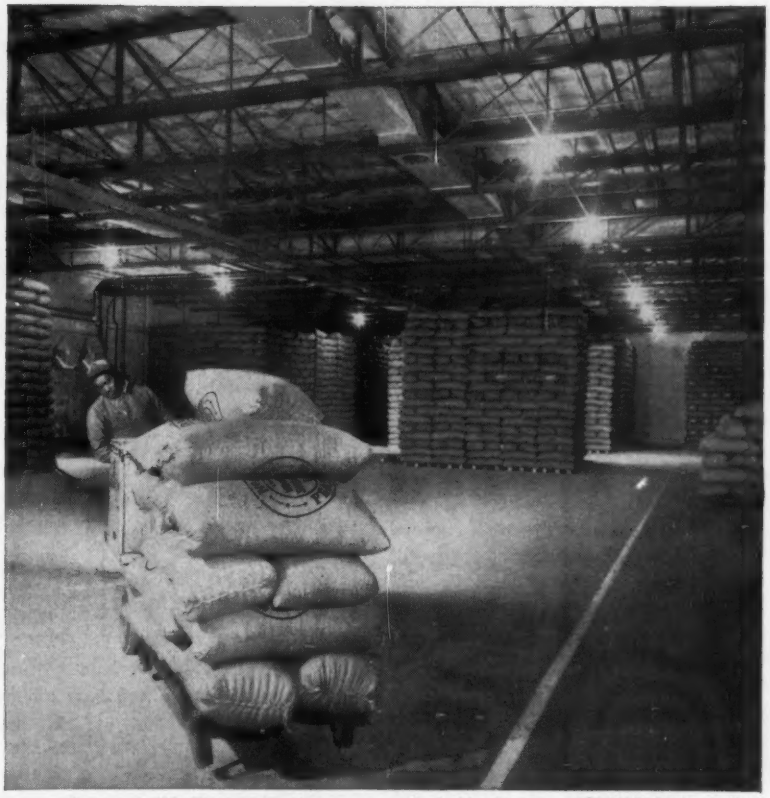


The speed and ease of application of the lightweight blocks of FOAMGLAS kept installation costs low for Planters.

FOAMGLAS insulation envelopes help keep Planters peanuts fresh



Peanuts in this Planters warehouse are protected by 4 inches of FOAMGLAS insulation in floor, walls, and ceiling. The unusual compressive strength of FOAMGLAS floor insulation lets Planters stack tiers of bagged peanuts higher (16 ft.) than ever before.

Planters Nut and Chocolate Company, Suffolk, Virginia, picked Pittsburgh Corning FOAMGLAS to insulate floors, walls and ceilings of four new warehouses . . . to form perfect insulation envelopes around their stored nuts.

When peanuts lose their shells, they lose an excellent protection provided by Nature. Once Planters removes the shells to sort, grade and bag the peanuts, they rely on rigid temperature-humidity control to keep the nuts moist and fresh in the warehouses. They rely on vapor-proof FOAMGLAS insulation to help them maintain this precise control at all times.

Because FOAMGLAS is vapor-proof, it forms a natural vapor barrier. This makes it easy to keep relative humidity at a constant 65-70%. And since FOAMGLAS *stays dry*, it holds its original insulating value. This makes for real economy in holding temperatures at 38°F. The material is easy and economical to apply, and this incombustible insulation provides extra building safety, too.

If *you* need constant long-lasting insulating value, you need FOAMGLAS—the moisture-proof insulation. Get the full story in our latest Low Temperature Insulation Catalog. Send for it today.

PC Glass Blocks are another outstanding building product of Pittsburgh Corning Corporation.

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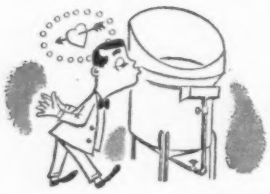
Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.



"Lixator" Improvements Make Brine Production More Efficient

Widely used throughout industry, Lixators are automatic rock-salt dissolvers developed exclusively by International Salt Company. They produce high-quality, fully saturated, self-filtered brine . . . and virtually eliminate the work and expense of storing, handling and using dry salt.

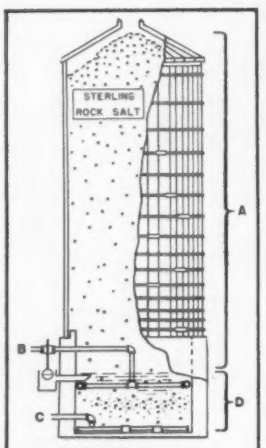
Excellent as this brine-making equipment is, International is constantly working to *improve* Lixator designs. From time to time, we also introduce special new Lixator attachments. Here are some improvements and attachments that can make production of Lixate brine more efficient and economical in your plant.

Low liquid level—a basic design feature that provides great savings by eliminating the need for deep salt-dissolving tanks. For example, it is possible to convert an old silo, dry-salt storage bin or unused room into a first-rate Storage or Silo Lixator simply by making the lowest portion into a waterproof salt-dissolving and brine-storage tank. The upper portion need *not* be waterproofed or made brine-tight.

A common method of waterproofing is to line the floor and bottom portion of the walls with concrete. Lixate brine is made in this lower tank portion, with dry salt occupying the space above the liquid level.

Electrode controls. To regulate the liquid level in a Lixator, electrode controls are often used. This is an excellent alternative to the standard float controls in many Lixator installations.

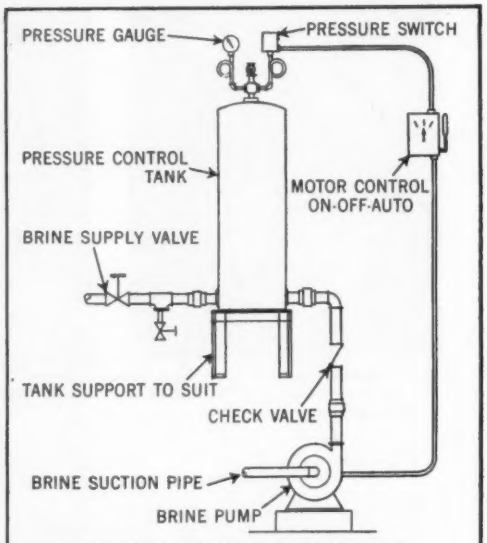
Two electrodes of different length are protected in a length of pipe, then immersed in the Lixator. Whenever the liquid level falls below the lower electrode, the electric circuit is broken, a relay opens to close a load contact, and the water valve is opened. When the liquid level rises to the higher electrode, the circuit is closed, and the relay closes to shut the valve. In this way the brine level is maintained between the desired limits in the Lixator—continuously and automatically.



A. SALT STORAGE ZONE
B. WATER INLET
C. BRINE OUTLET
D. SALT DISSOLUTION AND FILTRATION ZONE

LOW LIQUID LEVEL

In this Silo Lixator, only the bottom portion is brine-tight



AUTOMATIC PRESSURE CONTROLS FOR LIXATE BRINE PUMPING SYSTEM

Pressure controls . . . for brine systems. International has introduced the technique of automatically starting and stopping Lixate brine pumps by pressure switches. If a valve is opened anywhere in the brine distribution piping, brine flows and brine line pressure drops slightly. This, in turn, activates a switch, starting the pump, which withdraws brine from the Lixator. Everything is automatic. The operator only opens and closes a brine valve at the point of use.

Introduction of brine-metering devices. In cooperation with leading meter manufacturers, International has pioneered in the application of highly accurate and specialized meters for brine. Among the advantages of using these meters with Lixators is precise *salt* measurement, since every gallon of Lixate brine contains exactly 2.65 lbs. of salt. Also, automatic shut-off metering devices allow you to preset the amount of brine you want. Flow will stop when this amount has been measured out.

In many other ways, brine meters and other Lixator attachments can boost brine-making and brine-using efficiency. To find out how you can benefit from such devices, contact International. One of our experienced sales engineers will gladly explain about brine-density and brine-flow regulators, piping layouts, continuous brine-dilution devices, etc. He can also recommend the type and size of Sterling Salt best suited to your needs.

INTERNATIONAL SALT CO., SCRANTON, PA.

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